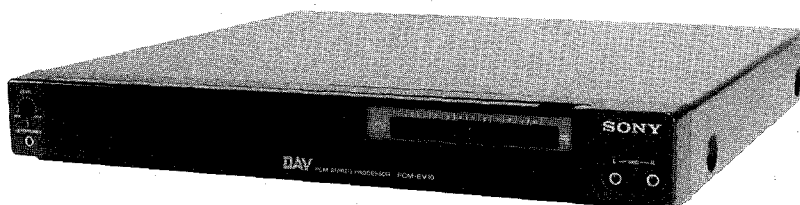


PCM-EV10E/UB

SERVICE MANUAL

AEP Model
UK Model



July, 1985

SPECIFICATIONS

Code format 8mm video PCM audio format
 Number of audio channels 2 channels
 Sampling frequency 31.25 kHz
 Quantization 8-bit non-linear quantizing
 Frequency response 20 - 15,000 Hz
 Dynamic range More than 88 dB
 Wow and flutter Less than 0.005 %RMS
 Error correction Error correction and concealment using CRCC and parity

Inputs and outputs

Inputs

	Reference input level	Impedance	Minimum input level
LINE IN (phono type)	0.24 V (-10 dBs)	50 kohms	77.5 mV (-20 dBs)
MIC IN (mini type)	0.78 mV (-60 dBs)	For low impedance microphones	0.25 mV (-70 dBs)

Multi connector 21-pin

Outputs

	Reference output level	Load impedance
LINE OUT (2) (phono type)	0.24 V (-10 dBs)	More than 10 kilohms
HEADPHONES (stereo minitype)	2 mW to 0.002 mW variable	32 ohms

General

Power requirements

PCM-EV10UB: 240 V, 50 Hz

PCM-EV10E: 220 V, 50 Hz

Power consumption

10 W

Dimensions

Approx. 355 x 52 x 337 mm (w/h/d)
(14 x 2¹/₈ x 13³/₈ inches)

including projecting parts and controls

Weight

Approx. 3.7 kg (8 lbs 3 oz)

Supplied accessories

Audio connecting cord RK-74H

Optional accessories

Video connecting cord

VMC-2121CE, VMC-2106S, etc.

— Continued on next page —

PCM STEREO PROCESSOR **8**
SONY®



ACC

While the information given is true at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

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SECTION 1 GENERAL

1-1. PRECAUTIONS

On safety

- Before operating, check that the operating power voltage and frequency of the unit are identical with those of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the mains outlet if it is not to be used for an extended period of time. To disconnect the lead, pull it out by the plug. Never pull the lead itself.
- The unit is not disconnected from the mains (ac power source) as long as it is connected to the mains outlet, even if the unit itself has been turned off.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, such as, a microwave oven or large loudspeaker.
- Do not place any heavy object on the unit.

On operation

When the unit is not in use, turn the power off to conserve energy and to extend its useful life.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution.

Do not use any type of solvent, such as alcohol or benzene, which might damage the finish.

On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

If you have any questions about this unit, contact your Sony dealer.

1-2. FEATURES

PCM (Pulse Code Modulation) digital audio recording

In the PCM digital audio recording system, audio signals are converted into digital signals and recorded on the PCM track of an 8 mm format video tape. This system offers fidelity far superior to the conventional analog system.

The following two audio tracks are available. See illust. [A].

- a) **STD (standard) track** for video and audio (monaural) signals
- b) **PCM (digital) track** for audio (stereo or bilingual) signals

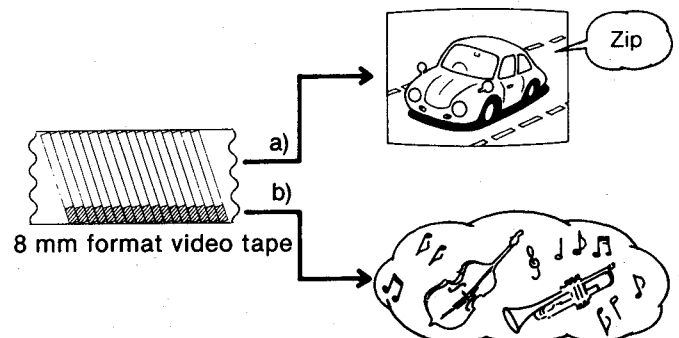
Monitoring of bilingual programmes

The main or sub sound of bilingual programmes on commercially available recorded tapes can be listened to.

Audio dubbing function

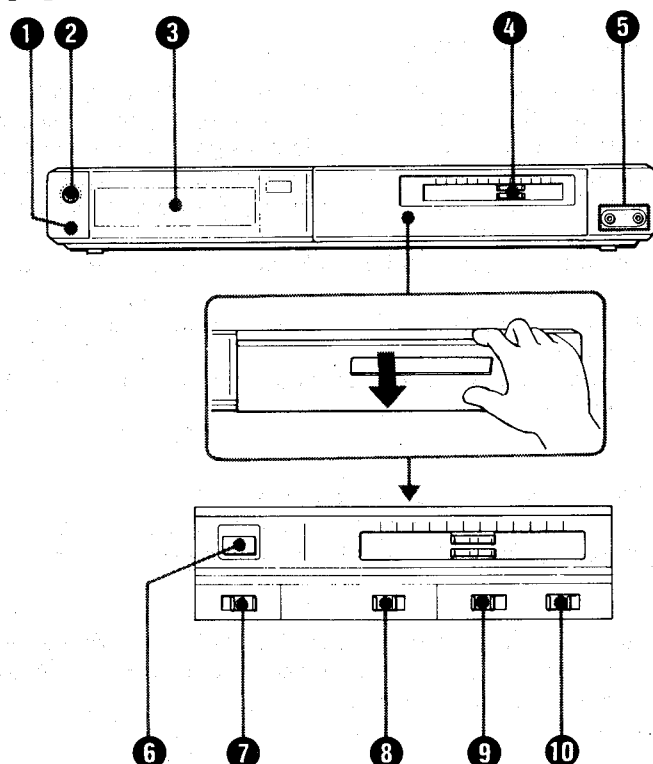
Any desired music or narration can be additionally recorded on a prerecorded video tape by using the PCM digital recording system.

[A]



1-3. LOCATION AND FUNCTION OF CONTROLS

[B]



Front [B]

① HEADPHONES jack (stereo minijack)

Insert headphones to monitor the sound being recorded or to listen to the played back sound selected with the MONITOR (PLAY) and the BILINGUAL SELECT switch. The sound volume can be adjusted with the LEVEL control.

If your headphones are equipped with a stereo phone plug, use the optional Sony PC-33 plug adaptor or equivalent (stereo phone → stereo mini).

② LEVEL (headphone volume) control

Adjusts the headphone volume.

③ Display window [B-1]

The following indications will be displayed according to the operation.

④ Peak level meter

This meter shows the peak output level of the sound which is being recorded or played back.

⑤ PCM indicator

Lights up when

- the STANDBY switch is set to ON.
- the PCM recording is being made.
- you play back the tape recorded in the PCM mode with the MONITOR (PLAY) switch set to PCM or to MIX.

Note

While you are presetting TV programmes on the connected video cassette recorder with the AUDIO INPUT SELECT switch of the processor set to TUNER, this indicator does not light up.

⑥ AUDIO DUB indicator

Lights up when you dub audio signals. This still lights up when you stop dubbing for a moment (audio dubbing pause mode).

⑦ STEREO indicator

Lights up when

- the AUDIO INPUT SELECT switch is set to LINE.
- you connect one or two microphones to the MIC (microphone) jacks.
- you play back tapes recorded in stereo.

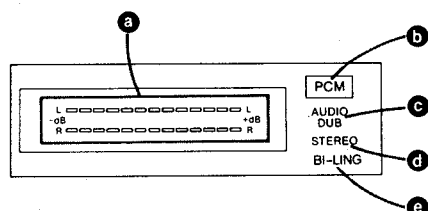
⑧ BI-LING (bilingual) indicator

Lights up when you play back tapes recorded in bilingual mode.

⑨ REC (recording) LEVEL control

Adjusts the PCM recording level.

[B-1]



⑤ MIC (microphone) jacks (L/R) (mini type)

By connecting one or two microphones here, you will be able to record the sound from the microphone(s) in the PCM mode.

Stereo recording can be made by connecting microphones to both L(left) and R(right) jacks. However, if you connect one microphone only to the L jack, only the sound from the L jack will be recorded both on the L and R channel of the PCM track.

Notes

- For microphones with a conventional phone plug, convert the plug into the mini plug with the optional Sony PC-1A plug adaptor or equivalent.
- If you do not record from the MIC jacks, be sure to disconnect the microphones since recordings from these jacks has priority over any other recordings.

Inside the front compartment

⑥ AUDIO DUB button

Press during the playback pause mode to record music or commentary on the PCM track of any recorded video tape.

⑦ STANDBY ON/OFF switch

When this switch is set to ON, you can turn this unit on and off by the POWER ON/OFF switch on the video recorder. The PCM indicator lights up. When set to OFF, the indicator will be off and the set will be turned off.

⑧ AUDIO INPUT SELECT switch

Select the input signal to be recorded in the PCM mode.

TUNER: for TV programmes being received on the connected video recorder.

LINE: for audio signals received through the LINE IN (L/R) input jacks.

⑨ BILINGUAL SELECT switch

When you play back a tape recorded in the bilingual mode, select one of the following three positions according to the sound which you want to listen to.

MAIN: for MAIN sound of the bilingual programme. Normally, set to this position.

SUB: for the SUB sound of the bilingual programme.

M/S: for both the MAIN and SUB sound of the bilingual programme.

⑩ MONITOR (PLAY) switch

Select the output sound signal from the LINE OUT jack and the HEADPHONES jack.

PCM (AUTO): for listening to the PCM sound of tapes being played back.

Normally, set to this position. (AUTO)

If you play back a tape without any recorded PCM sound signals, you can hear automatically the standard sound recorded on the standard (analog) track.

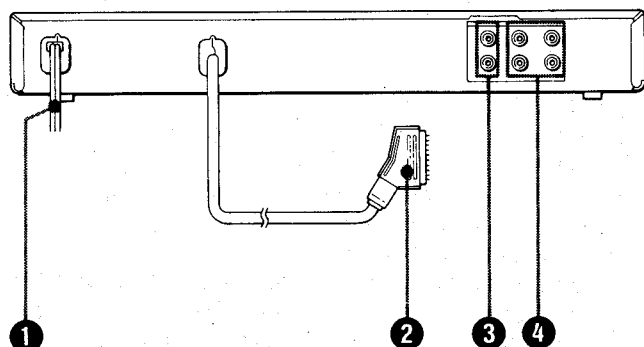
MIX: for listening to both the PCM sound of the PCM track and the standard sound of the standard track simultaneously.

STD (standard): for listening to the standard sound.

Note

Recordings are made independently to the position of this switch.

[C]



rear [C]

① AC mains lead

Connect to a mains outlet.

② Multi connector (21-pin)

Connect to the PCM PROCESSOR connector (multi input jack) of the video cassette recorder EV-A300 EC/UB.

③ LINE IN (input) (L/R) jacks (phono type)

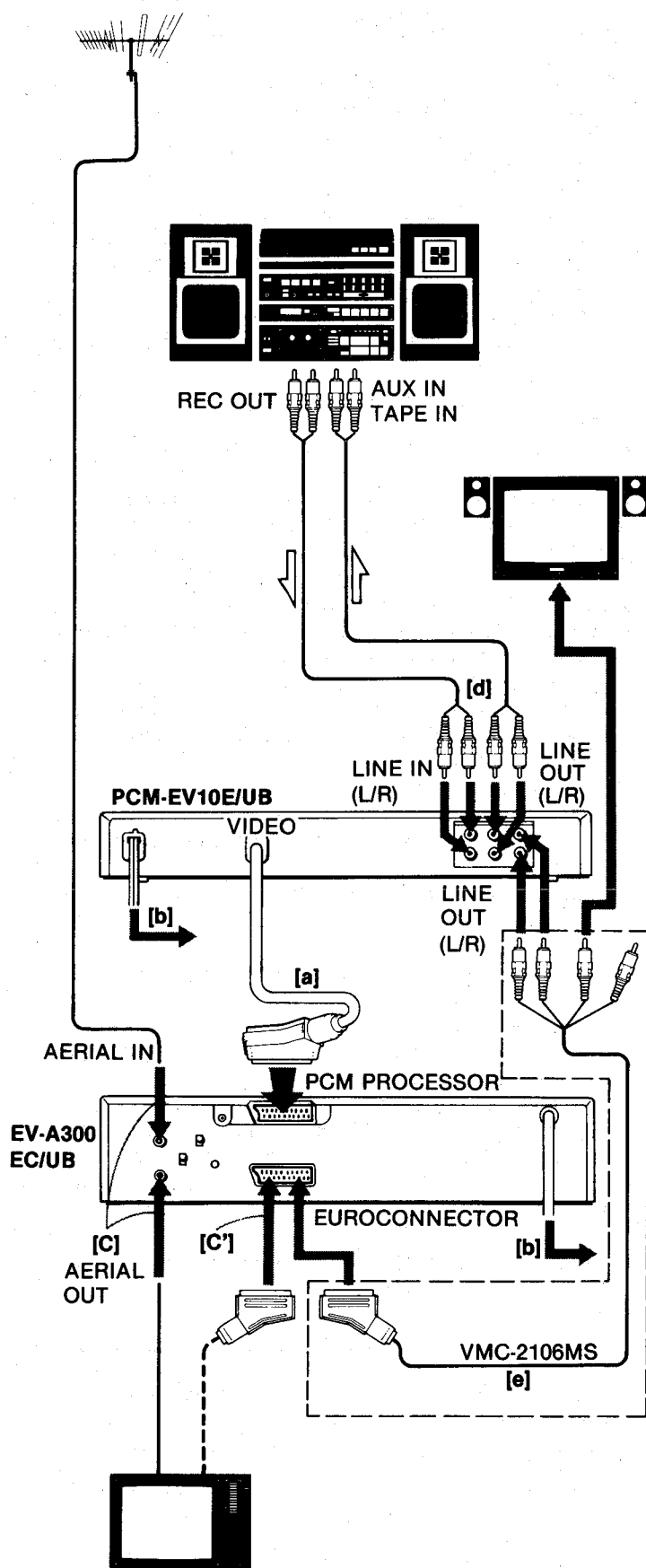
Connect to the output jack(s) of a stereo video recorder, an audio cassette deck, a compact disc player or a FM tuner etc. PCM recordings of the input signals from these equipments will be made in stereo.

④ LINE OUT (output) 1/2 (L/R) jacks (phono type)

Connect to the input jack(s) of a video recorder, an audio amplifier etc. for monitoring the sound which is being recorded, or for listening to tapes being played back and to TV programmes received through the connected video recorder.

These two pair of L/R jacks which have the same functions, can be connected to each equipment simultaneously.

[D]



1-4. CONNECTIONS [D]

Notes

- Unplug each unit from the mains outlet before making the following connections.
- Make sure the connections are secure. A loose connection may cause noises.
- Keep the connecting cords away from the aerial connecting cords. If you do not, picture on the TV may have noises or the output sound may be noisy.
- Generally, white plugs of audio connecting cords are for L(left) channel jacks and red plugs are for R(right) channel jacks.
- For connection of video cassette recorder or colour monitor, refer to the instruction manual of each equipment.

CONNECTING THE PCM-EV10E/UB TO THE EV-A300EC/UB [a]

Connect the multi connector of the PCM-EV10E/UB to PCM PROCESSOR of EV-A300EC/UB.

POWER CONNECTION [b]

Connect to a wall outlet after making other connections.

CONNECTING MONAURAL TV RECEIVER/MONITOR TO THE SYSTEM

Aerial/cable connection [c]

Prepare the aerial or cable end using the appropriate connector, and make the aerial connection between the recorder and the TV/monitor.

For details, refer to the instruction manual of the recorder.

Connection using the EUROCONNECTOR of the video recorder [c']

If your TV/monitor is equipped with audio/video input terminals or multi input terminal etc., connect this (these) terminal(s) to the EUROCONNECTOR of the recorder by using the appropriate connecting cables.

OTHER CONNECTIONS

From the EUROCONNECTOR on the video recorder EV-A300EC/UB, only the video signals and the monaural audio signals are output.

If you want to have stereo audio signals especially for monitoring on your stereo monitor or TVs, other audio connections on your PCM processor are required.

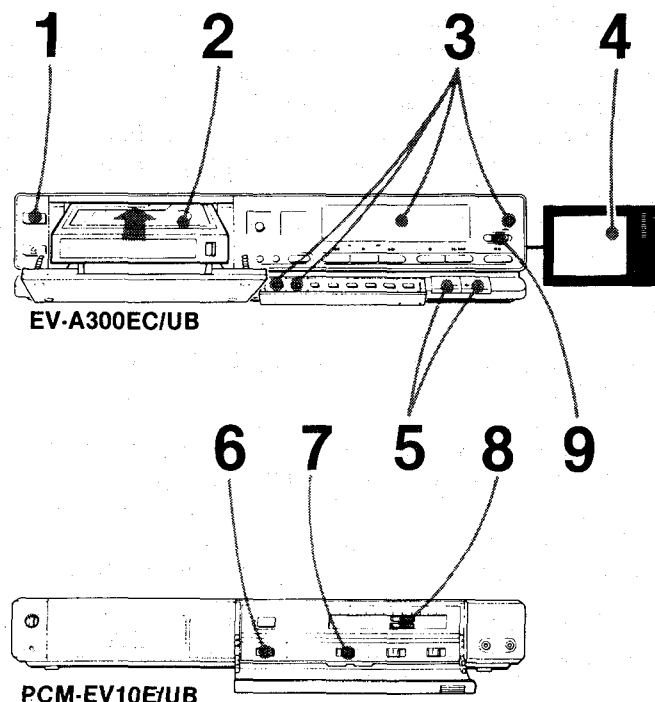
In addition to the normal connection between TV and your video recorder, if you connect any stereo audio system which will be used as an audio source and monitor, you can enjoy the superb PCM sound while viewing the played back picture on your TV. [d]

If you want to enjoy simultaneously the video and audio signals on a single stereo TV set, connect with the appropriate audio/video connecting cord according to your TV type. [e]

The connecting cables must match the forms of plugs or connectors on your TV. For details, contact your nearest Sony dealer.

1-5. PCM RECORDING [E]

[E]



To record TV programmes in the PCM mode

FIRST STEP : on your video recorder

- 1 Turn on the video recorder.
- 2 Insert a video cassette.
- 3 Set the following switches to the appropriate position:
Set the INPUT SELECT switch to TUNER.
Set the REC MODE (recording mode) switch to SP or LP. (SP mode is recommended for better picture quality.)
Make sure that the VTR indicator lights up in the display window. If it does not, press the TV/VTR select button.
- 4 Turn on the TV and select the channel for the video recorder.
- 5 Select the programme to be recorded.

Now the programme to be recorded appears on screen. For details, refer to the instruction manuals of the video recorder.

SECOND STEP : on your PCM processor

- 6 Set the STANDBY switch of this unit to ON. The PCM indicator lights up.
- 7 Set the AUDIO INPUT SELECT switch to TUNER.
The recording will be made regardless of the position of the BILINGUAL SELECT and MONITOR (PLAY) switches.
- 8 Adjust the recording level as follows:
Adjust the REC LEVEL control so that the first red indicator sometimes lights up at the highest sound level.
Refer to the peak level meter for the precise adjustment.
- 9 Slide to the right the RECORD switch on the recorder to start recording.

- For TV programme recording, normally set the REC LEVEL control to the level 5.
- When the sound level is superior to 0 dB, red indicators will light up. In this case, the sound may be distorted. Lower the volume.
- Normally, set the standard volume level so that the [10] indicator (about -10 dBs) lights up. Change this level according to the type of the input sound.
- If you set the REC LEVEL control to the position which is too low, the output sound may have noises.

CAUTION

Television programmes, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provision of the copyright laws.

To record audio signals from the LINE IN (input) jack and the MIC (microphone) jack in the PCM mode

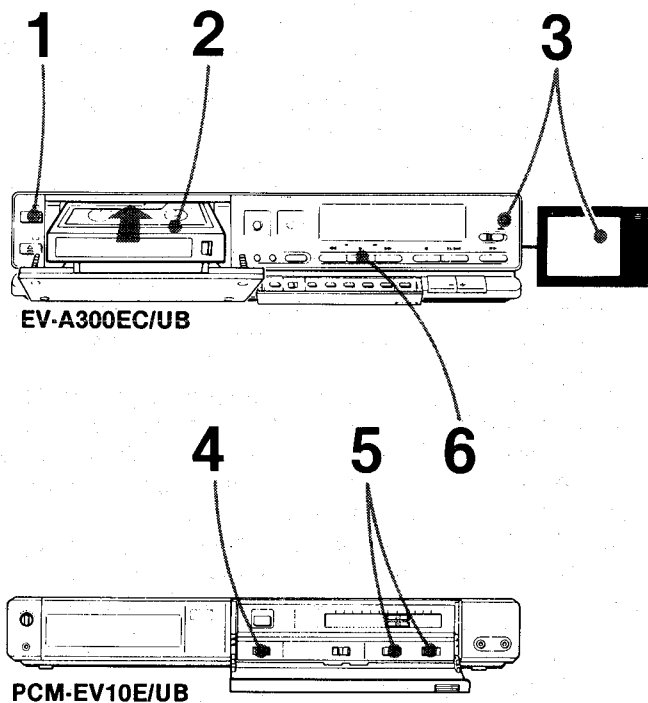
To record from the LINE IN jack : set the AUDIO INPUT SELECT switch to LINE.

To record from the MIC jack : connect one or two microphones to the MIC L(left) and/or R(right) jack.

Other operations are as same as the normal PCM recording described before.

- If any microphone(s) is (are) connected to the MIC jack(s), audio signals coming through these jacks will precede all other audio signal recordings.
- Audio signals through the LINE IN or MIC jacks are recorded in stereo. However, if you connect a microphone only to the MIC L(left) jack, the sound input from the L jack will be recorded on both L and R channels on the PCM track.

[F]



1-6. PLAYBACK [F]

FIRST STEP : on your video recorder

- 1 Turn on the video recorder.
- 2 Insert a video cassette previously recorded in the PCM mode.
- 3 If you want to view also the played back picture, turn on the TV, select the channel for the video recorder and check that the VTR indication lights up in the display window.

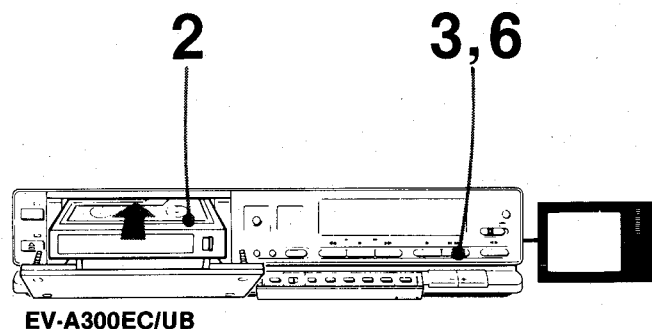
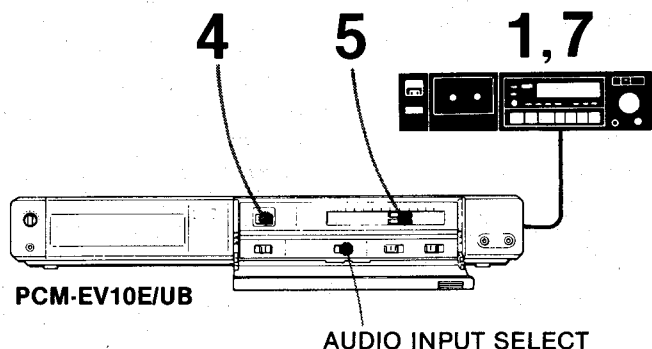
SECOND STEP : on your PCM processor

- 4 Set the STANDBY switch to ON.
 - 5 Select the appropriate position of the following switches:
Set the BILINGUAL SELECT switch to MAIN.
Set the MONITOR (PLAY) switch to PCM (AUTO).
(This is the most basic setting.)
 - 6 Press the ► (PLAY) button on the recorder to start playback.
 - 7 Adjust the volume level on the connected audio system or stereo color monitor etc.
- If you play back tapes recorded in stereo, the STEREO indicator lights up.
For tapes recorded in the bilingual mode, the BI-LING indicator lights up. Select with the BILINGUAL SELECT switch, the sound that you want to listen to.
 - You can also select the sound of the following tracks with the MONITOR (PLAY) switch :
Set to PCM to listen to the sound of the PCM track.
Set to STD to listen the sound of the STD track.
Set to MIX to listen to the sound of the both tracks.

1-7. TO DUB AUDIO SIGNALS [G]

Any desired music or narration can be recorded additionally on the PCM track of a tape, while the picture and sound prerecorded on the standard track are unchanged. (This is called "audio dubbing".)

[G]



[G-1]

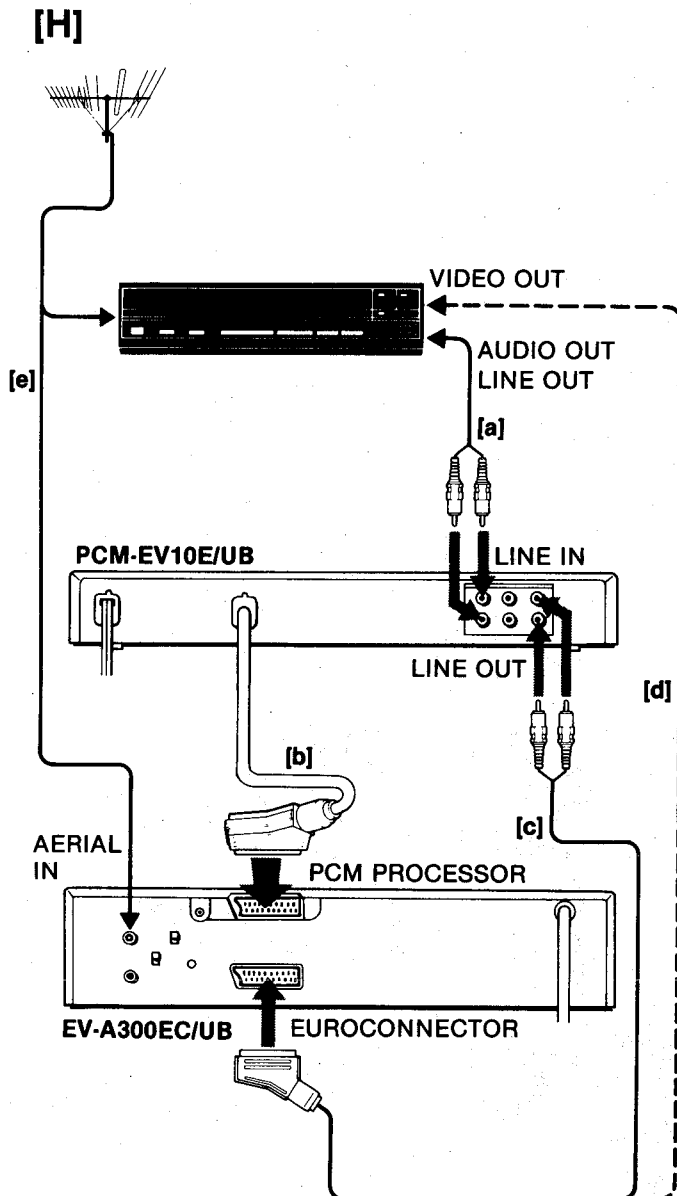


OPERATION

- 1 Connect to the PCM processor any audio equipment which will input sound signals to be recorded. If you dub audio signals from the LINE IN jack, set the AUDIO INPUT SELECT switch to LINE.
- 2 Play back the inserted video tape. (Refer to "PLAYBACK")
- 3 Decide where the audio dubbing is to start, and press the **II/III** (pause) button on the recorder.
- 4 Press the AUDIO DUB button. The AUDIO DUB indicator lights up.
- 5 Adjust the recording level with the REC LEVEL control.
- 6 Press **II/III** on the recorder. The video tape resumes running so that you can start recording at any time.
- 7 Turn on the connected audio equipment and input sound to your recording system. To stop dubbing for a moment, press **II/III** again. (The tape stops running.) To resume, press it once more. To stop completely, press the **■** (stop) button on the recorder.

- To listen to the sound recorded on the STD (standard) track (recorded with video signals), and the dubbed PCM audio signals simultaneously, set the MONITOR (PLAY) switch to MIX.
- If you want to make both video recordings and PCM audio recordings on any single video tape, be sure to make **video recordings first** and then make the PCM audio dubbing. When you start dubbing, check if video signals are already recorded. Note that, for one video tape, if video and standard audio recordings are already made on the STD track, you can only dub audio signals on the PCM track. STD audio dubbing is impossible.
- During audio dubbing, you may have a streak on the screen but this will not affect the picture recorded on the tape. [G-1]
 - a Clear picture
 - b Pale tone
 - c Dark tone

1-8. TO EDIT TAPES [H]



By making the connections as shown in the illustration [H], you can record audio/video signals from a master VTR (such as a hi-fi video recorder) or from a video disc player etc. in the PCM or STD mode.

Recording audio signals

First, connect the LINE IN (L/R) jacks of the PCM processor to the audio output jack(s) of the master player.

[a]

The input audio signals will be transmitted to the recorder through the PCM PROCESSOR connector and will be recorded on the PCM track. [b]

If you connect the LINE OUT 1/2 (L/R) output jacks of the processor to EUROCONNECTOR of the recorder, the audio signals will be recorded on the STD track. [c]

Recording video signals

Select one of two following connections.

— Connect the video outputs of the master player to the EUROCONNECTOR of the EV-A300EC/UB. [d]

— If you use a video recorder as the master player, make aerial connections both to the EV-A300EC/UB and another recorder. Set the INPUT SELECT switch on the EV-A300EC/UB to TUNER. (In this case, video and standard audio signals are recorded simultaneously on the STD track.) [e]

For each connection, you will need connecting cables which plugs and connectors must match the forms of terminals on each equipment to be connected. For details, contact your Sony dealer.

OPERATION

On the PCM processor

Set the INPUT SELECT switch to LINE.

On the master player

Set to the playback mode.

On the EV-A300EC/UB

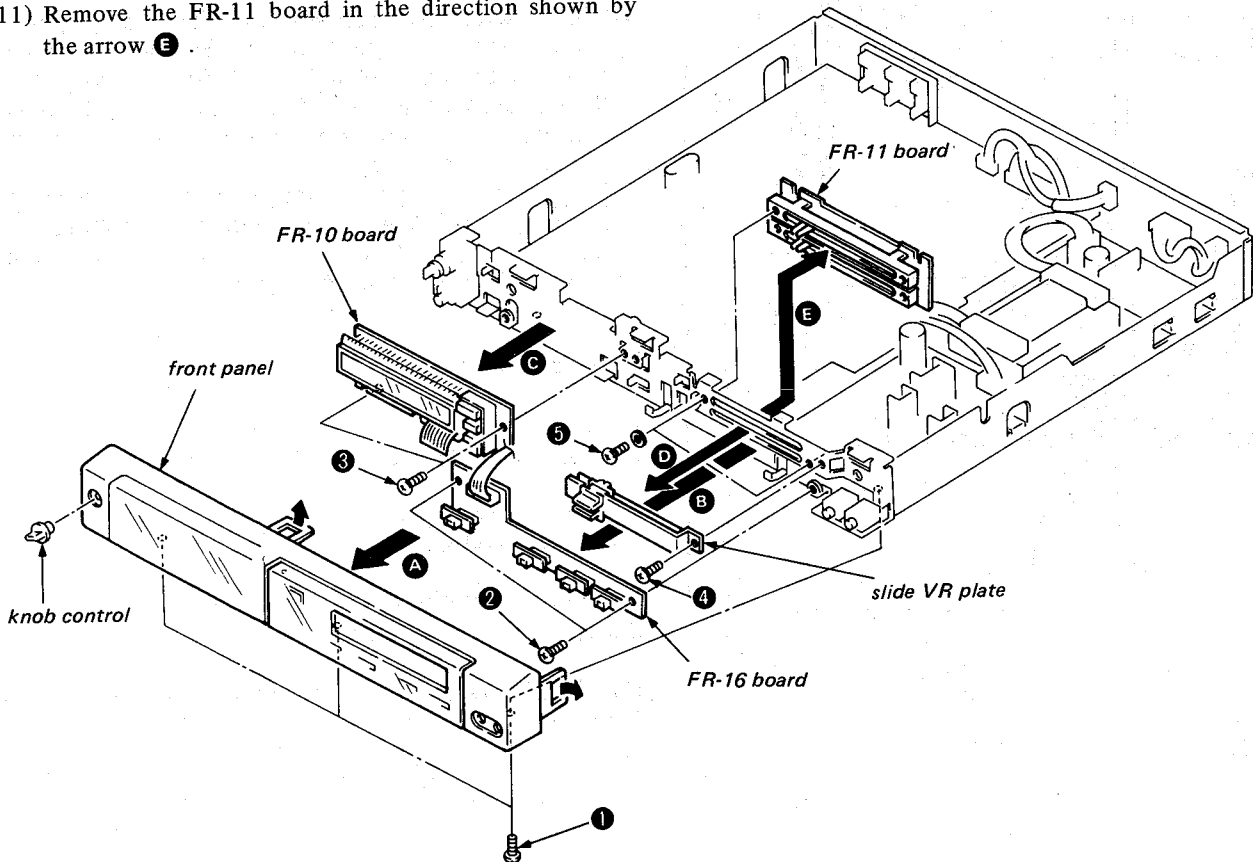
Set to the recording mode.

For details, refer to the instruction manual of each equipment.

SECTION 2 DISASSEMBLY

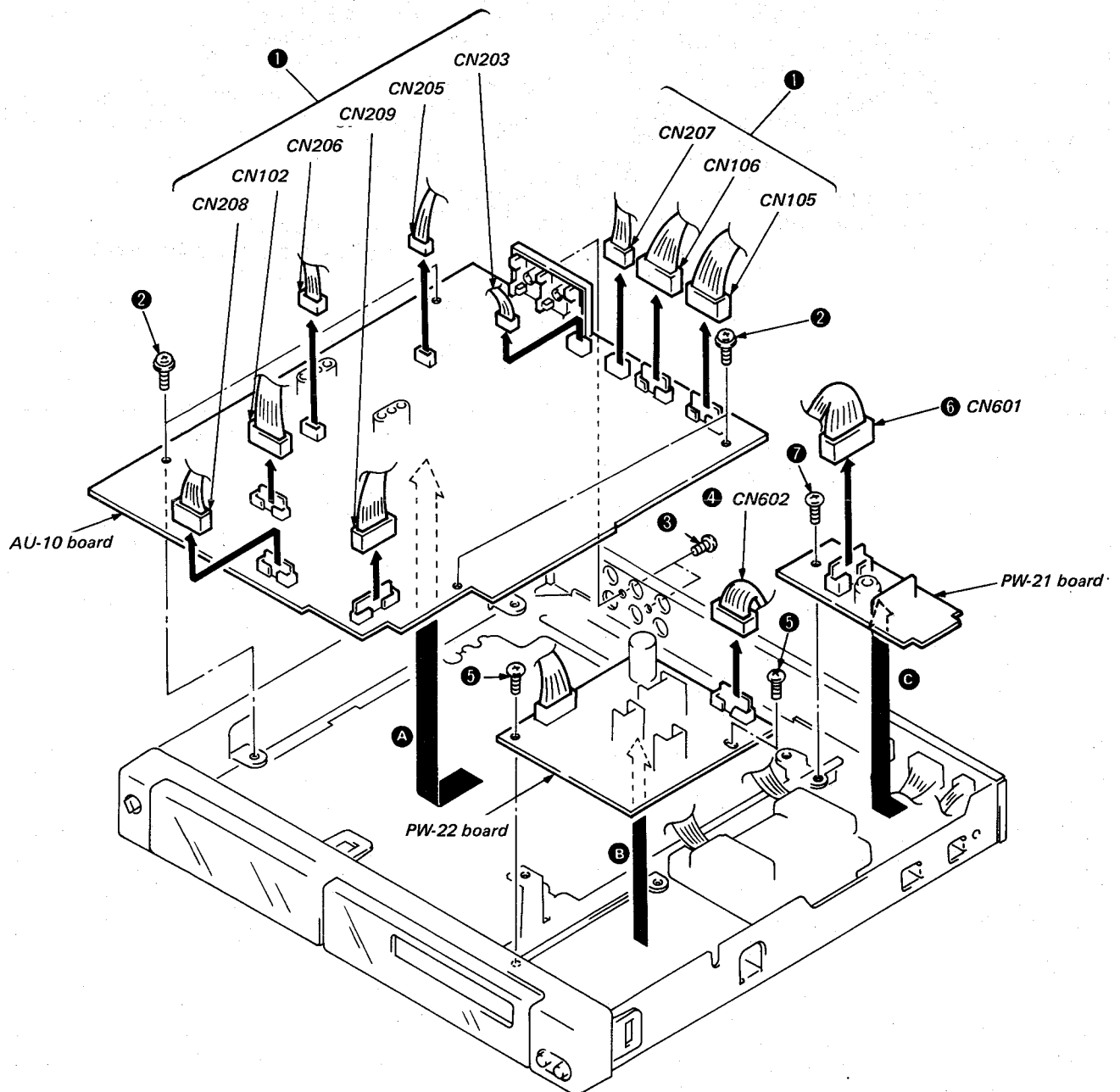
2-1. REMOVAL OF FRONT PANEL, FR-10 BOARD, FR-16 BOARD AND FR-11 BOARD

- 1) Remove the knob control.
- 2) Remove the three screws ①.
- 3) Remove the three hooks of the front panel and remove it in the direction shown by the arrow A.
- 4) Remove the two screws ②.
- 5) Remove the FR-16 board in the direction shown by the arrow B.
- 6) Remove the two screws ③.
- 7) Remove the FR-10 board in the direction shown by the arrow C.
- 8) Remove the screw ④.
- 9) Remove the slide VR plate in the direction shown by the arrow D.
- 10) Remove the two screws ⑤.
- 11) Remove the FR-11 board in the direction shown by the arrow E.



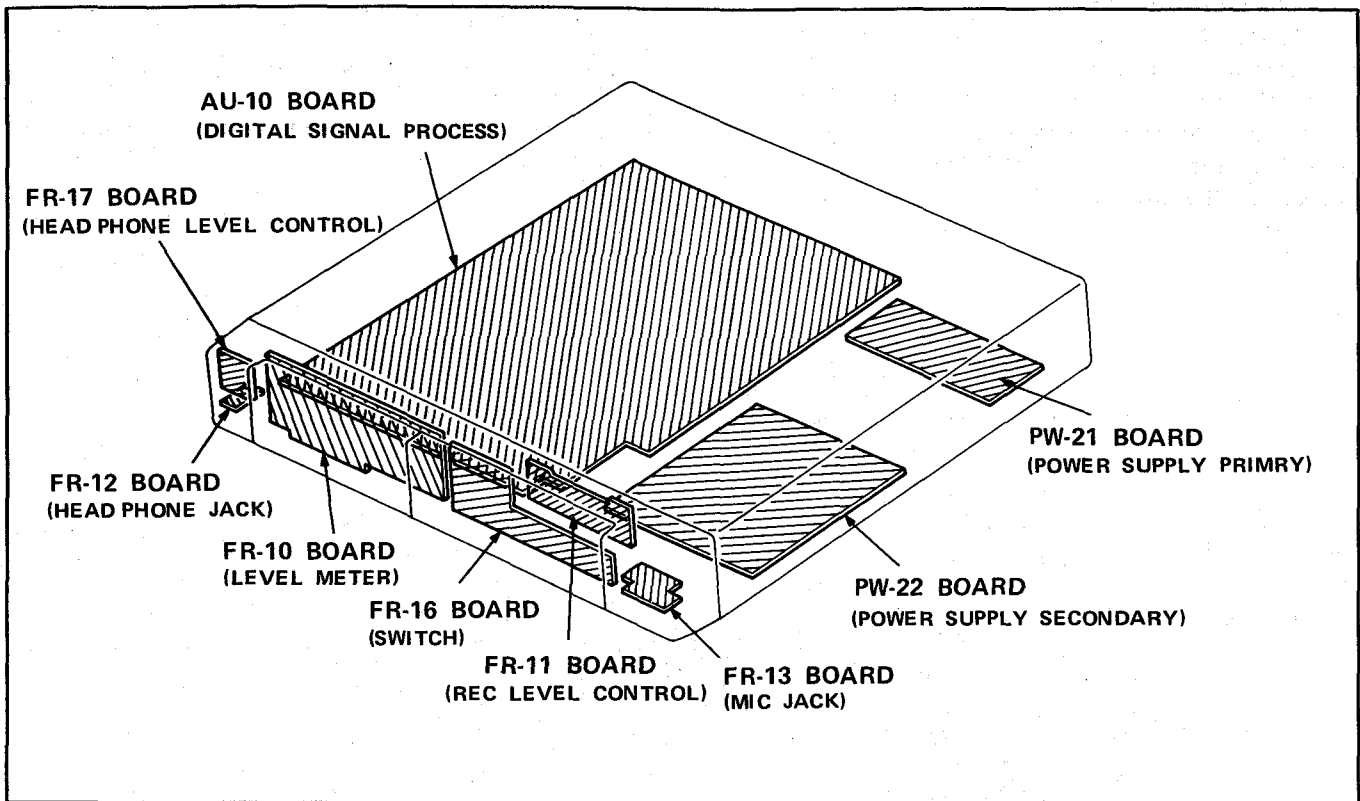
2.2. REMOVAL OF AU-10 BOARD, PW-22 BOARD AND PW-21 BOARD

- 1) Pull out the nine connectors ❶ (CN102, 105, 106, 203 and 205–209).
- 2) Remove the four screws ❷.
- 3) Remove the two screws ❸ and the AU-10 board in the direction shown by the arrow A.
- 4) Pull out the connector ❹ (CN602).
- 5) Remove the two screws ❺.
- 6) Remove the PW-22 board in the direction shown by the arrow B.
- 7) Pull out the connector ❻ (CN-601).
- 8) Remove the screw ❽.
- 9) Remove the PW-21 board in the direction shown by the arrow C.

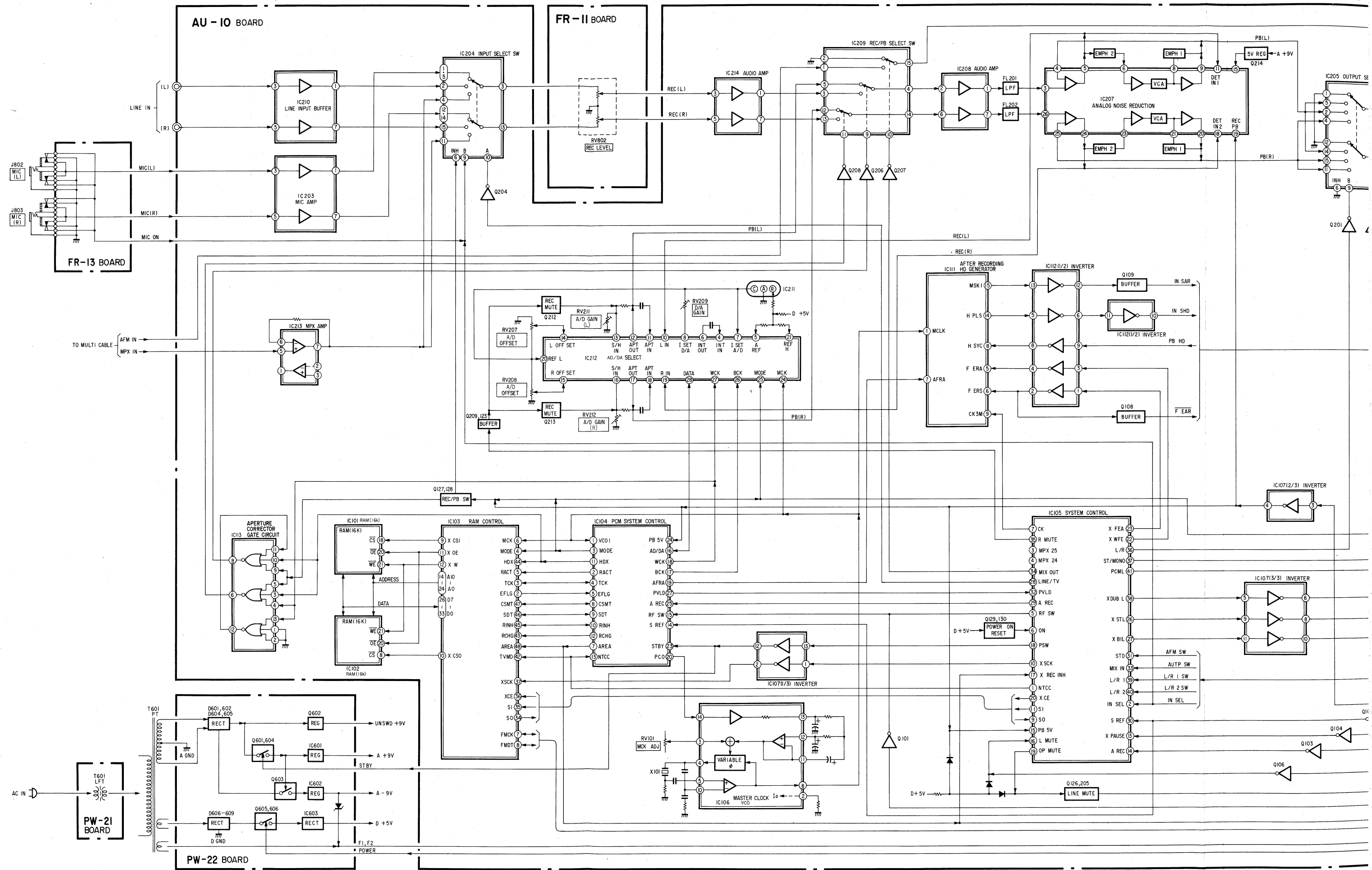


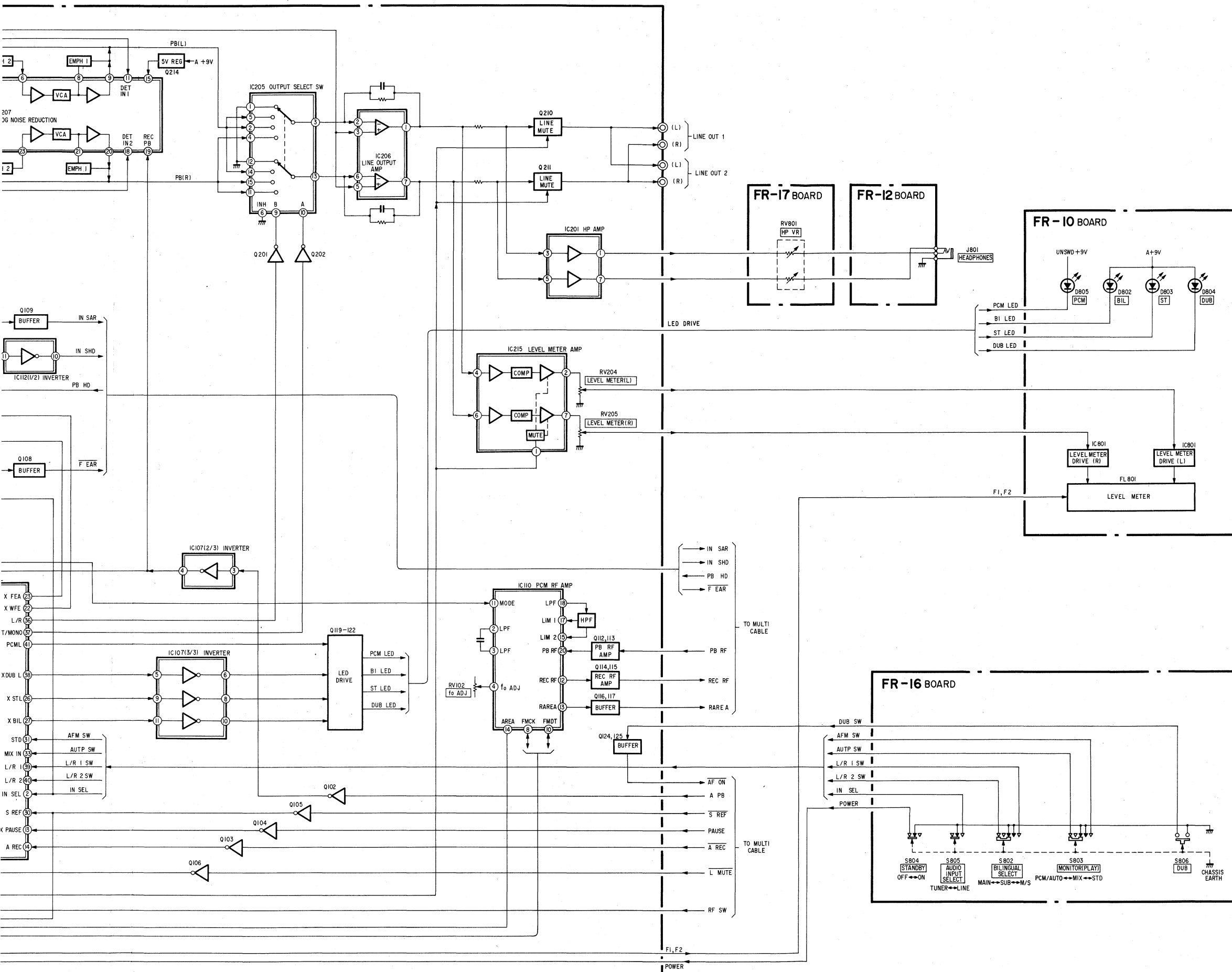
SECTION 3 DIAGRAM

3-1. CIRCUIT BOARDS LOCATION



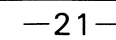
3-2. BLOCK DIAGRAM

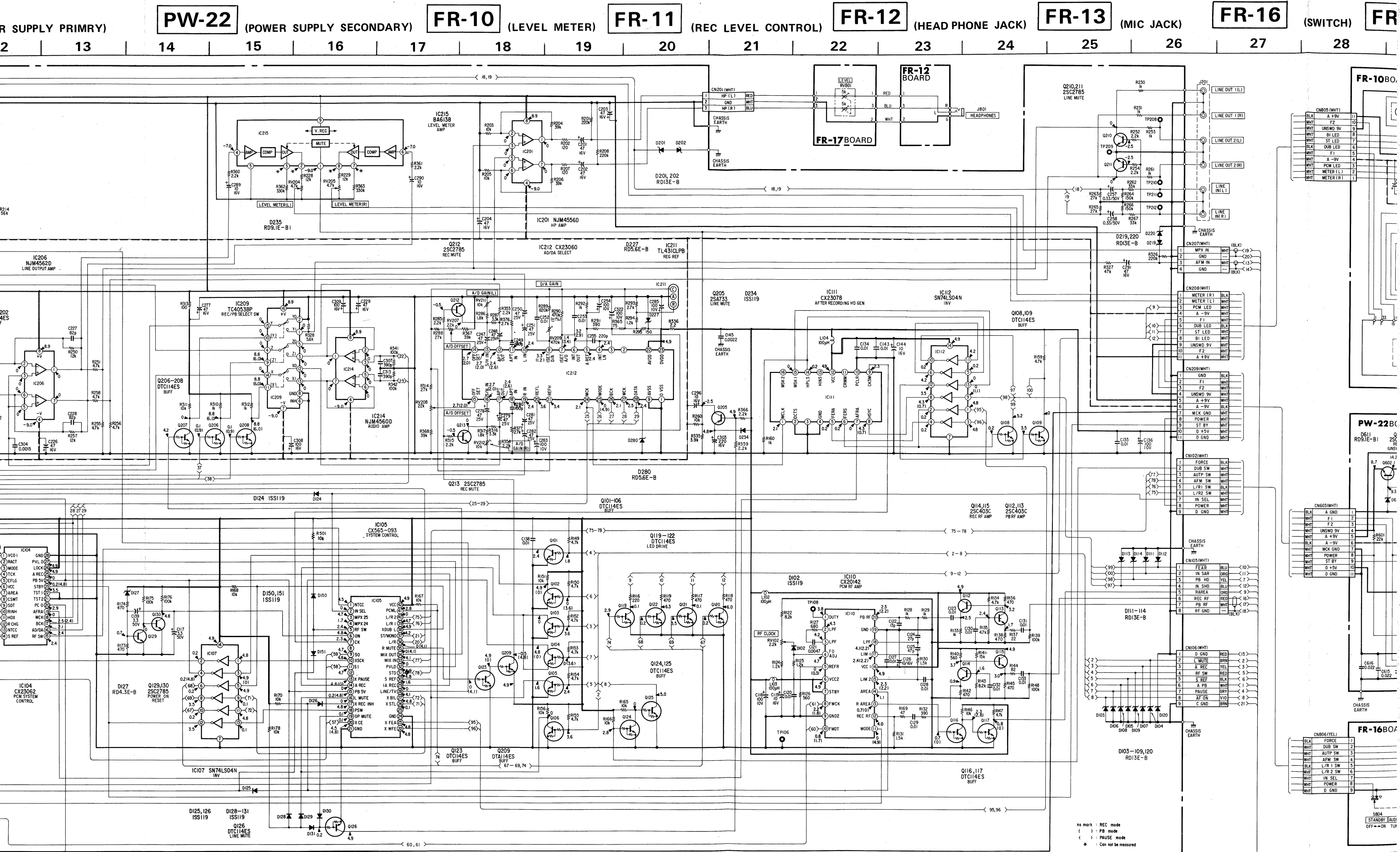


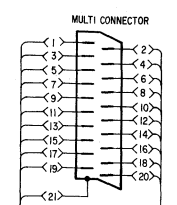
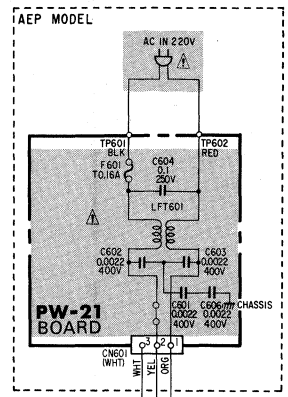
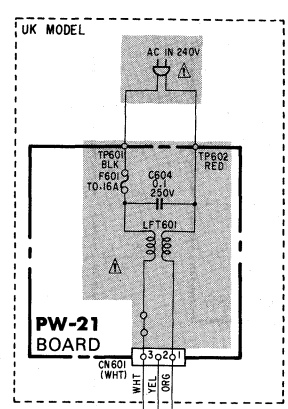
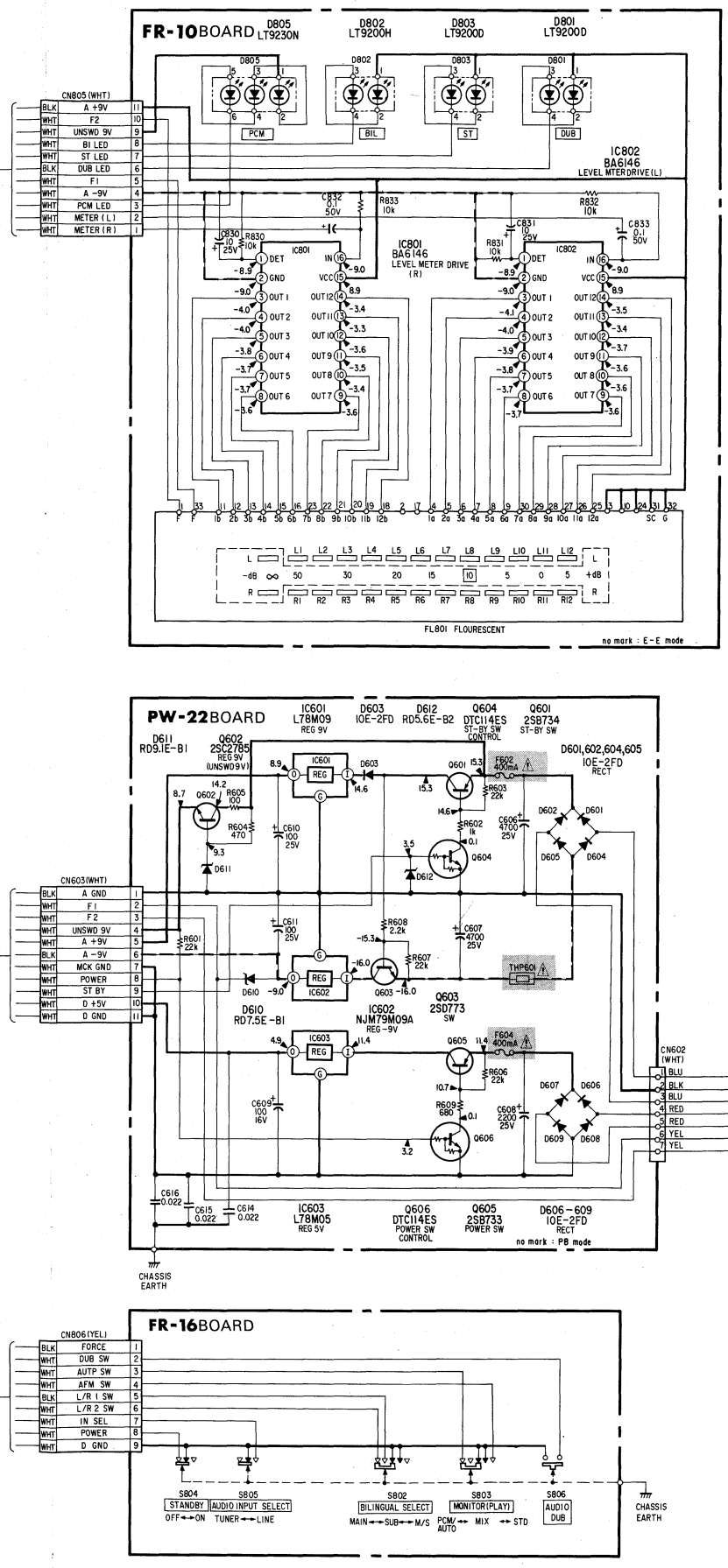
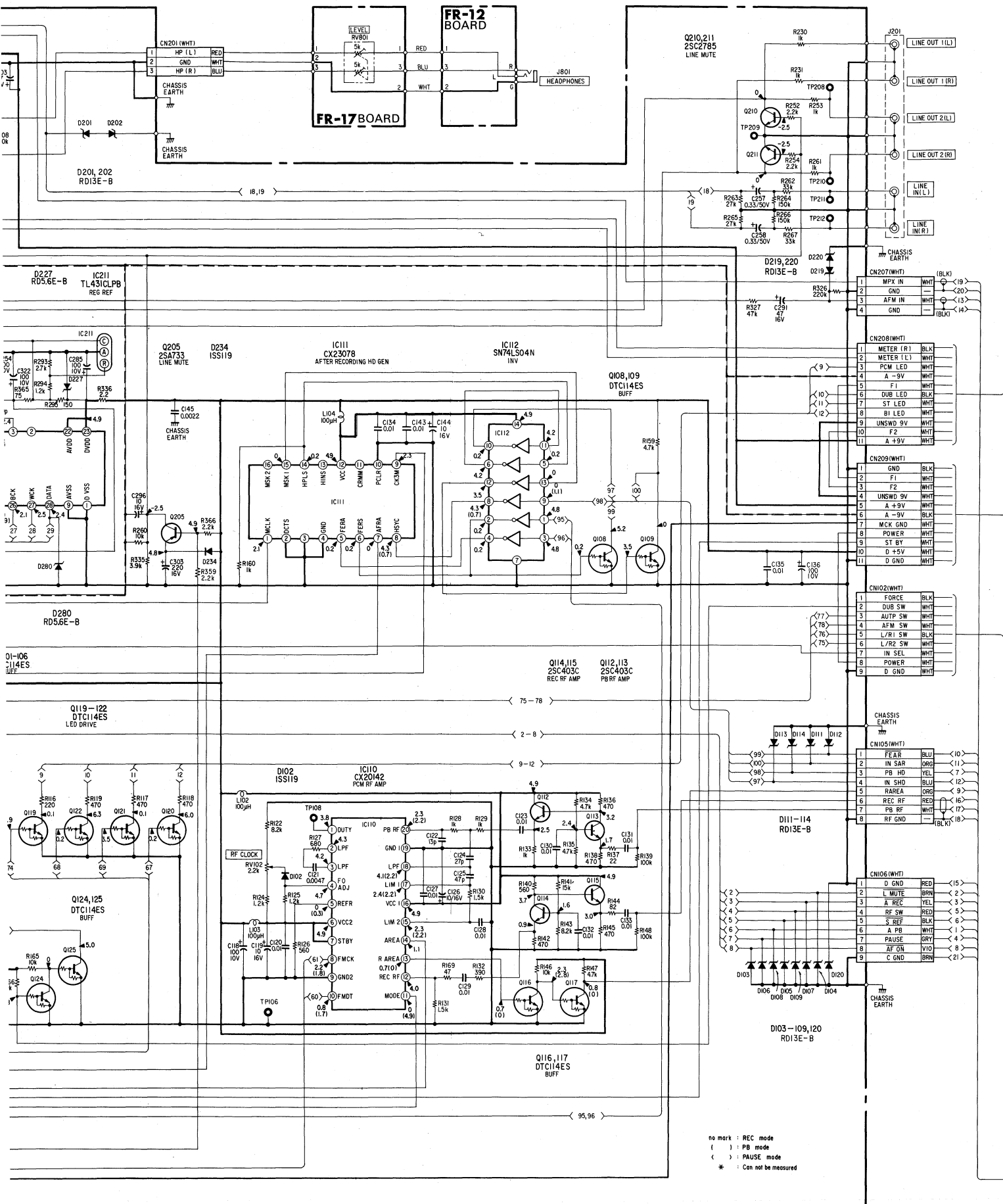


(POWER SUPPLY SECOND

1

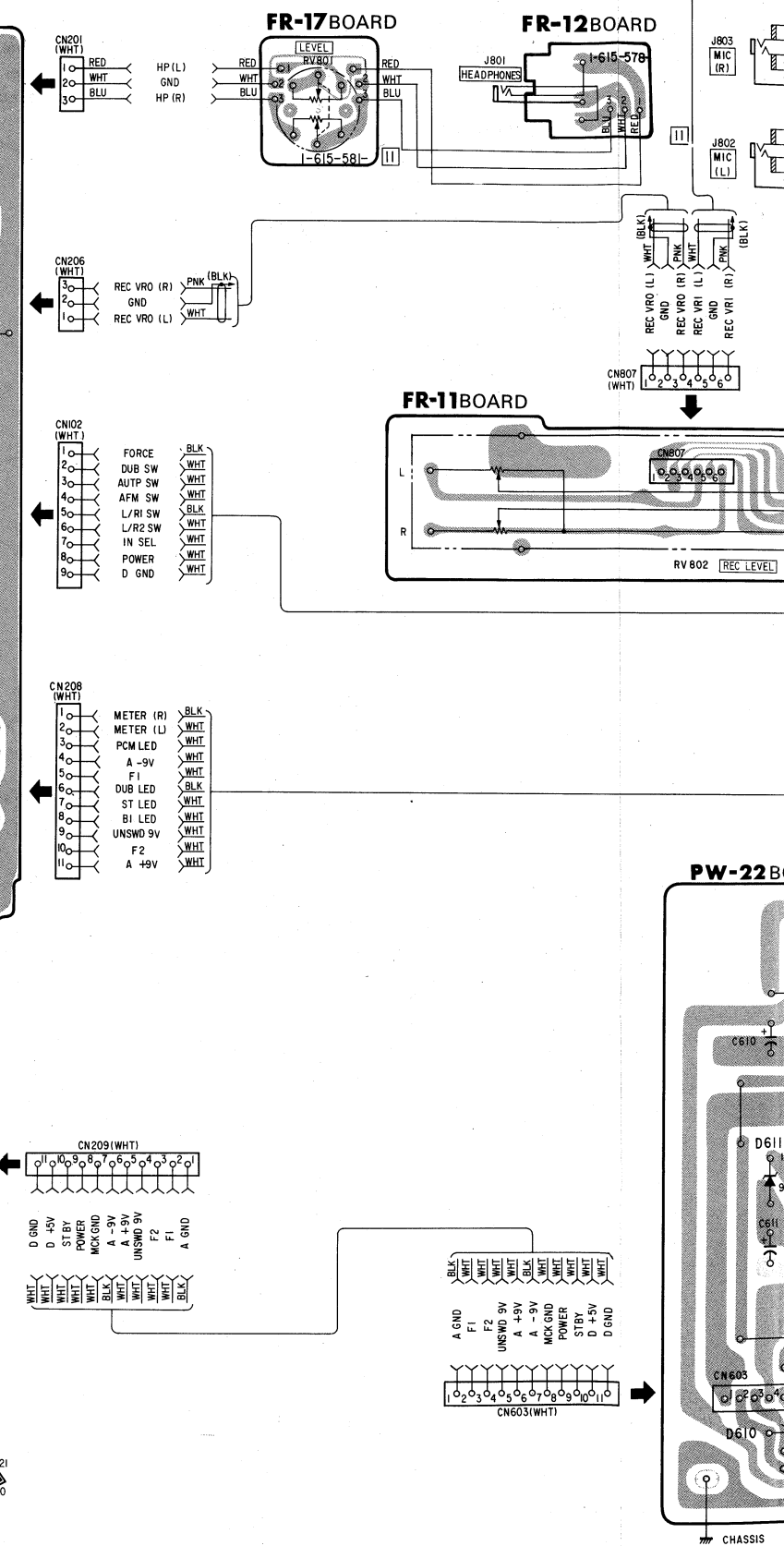
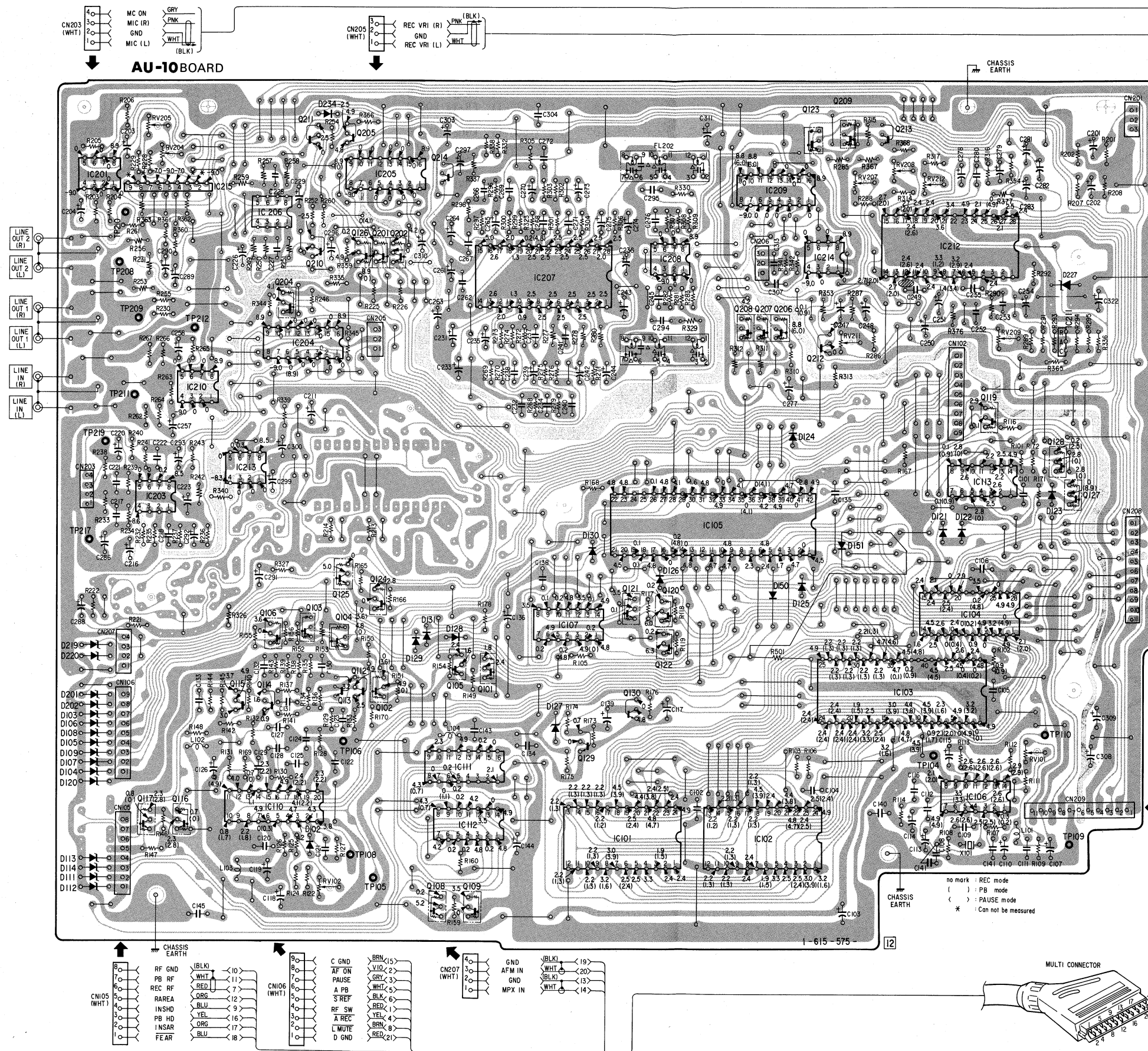






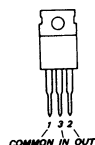
【PRINTED WIRING BOARDS】

Q, IC	D	TP, ADJ
123,209,23	234	RV205
211,205		RV204
214		RV207
IC201, IC205		RV208
IC215		RV212
IC206		
IC209		TP210
IC212		
210,126		TP208
201		
202		
IC208		
IC207		
204	227	TP209
		TP212
208,207,206		RV211
212,IC211		RV209
IC204		
IC210		TP211
119		
128	124	TP219
127		
IC213		
IC203	123	
IC113	121,122	TP217
IC105	130	
	126,125	
125		
103,124,121,120	219	
106,104	220	
122		
IC104		TP110
IC107		RV101
105,101		TP104
IC103		
113,112,102	201	
115,114	202	
130	103	
	27	
129	108	
	105	
IC111	109	
	107	
	104	
	120	
IC110		
IC106		TP109
IC112	102	TP108
117,116		
		TP105
	113	
	114	
	111	
	112	
108,109		



SEMICONDUCTORS

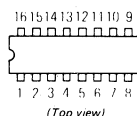
AN79M09
NJM79M09A



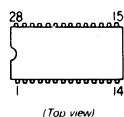
BA6138



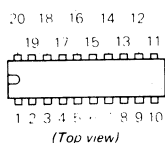
BA6146
HD14052BP
HD14053BP
M74LS04P
MB84052B
MB84053B
TC4052BP
TC4053BP
 μ PD4052BC
 μ PD4053BC



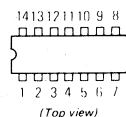
CX20148
CX23060
CX23062



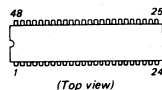
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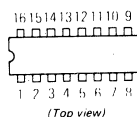
CX20143



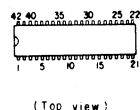
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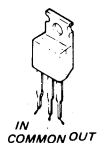
CX23078



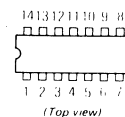
CX565-093



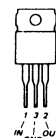
HA178M05P
NJM78M05A
NJM78M09A



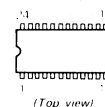
HD74LS04P
HD74LS27P
M74LS27P
MB74LS04
MB74LS27
NJM4556D
SN74LS04N
SN74LS27N



L78M05
L78M09



MB8416A-15
MSM5128-15RS
 μ PD4016C-3



NJM4560D
NJM4562D



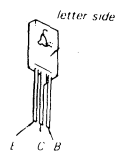
TL431CLP



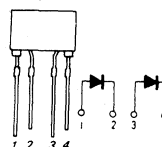
2SA733
2SA733-P
2SC1364
2SC1740S



2SD414
2SD809
2SD809-K



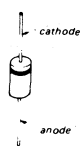
LT-9200D
LT-9200H
LT-9230N



2SB733
2SD733



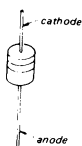
10E-2FD



2SC403SP
2SC403SP-3
2SC403SP-51
2SC633-SP5
2SC633-SP6
2SC2458
2SC2603
DTA114ES
DTC114ES



1SS119
1SS133
1SS148



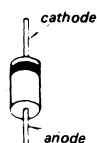
2SC403C



2SC2785



EQA02-09A
EQA02-09C
EQA02-BAB5
HZ4.3E-B1
HZ4.3E-B2
HZ4.3E-B3
HZ5.6E-B1
HZ5.6E-B2
HZ5.6E-B3
RD4.3E-B
RD4.7E-B
RD5.6E-B
RD9.1E-B1
RD9.1E-B2
RD9.1E-B3
RD13E-B



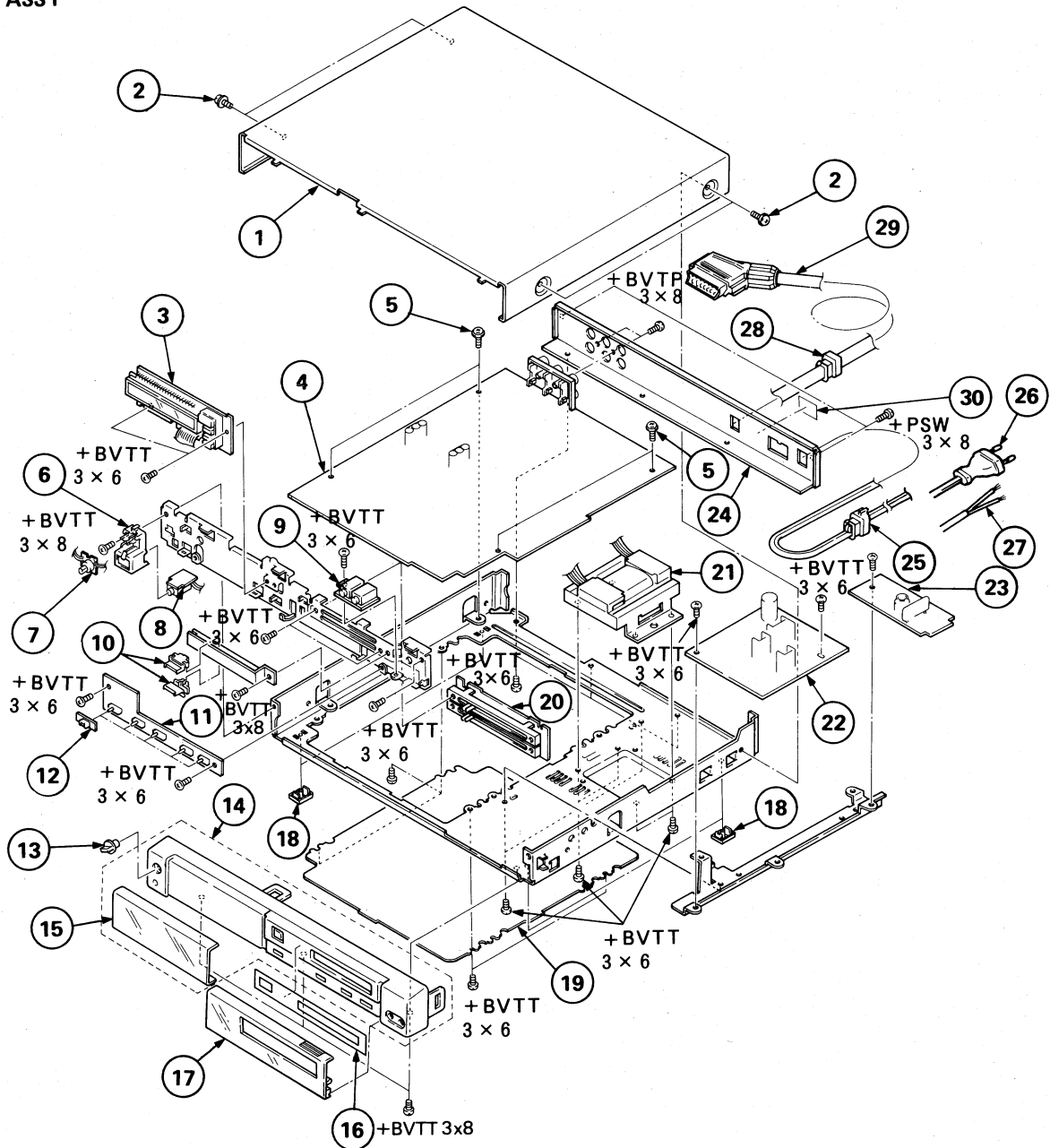
SECTION 5 EXPLODED VIEW

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

MAIN ASSY



SCREW

7-682-548-04	SCREW +P 3X8	
7-682-646-01	SCREW +PS 3X5	
7-685-646-71	SCREW +BVTP 3X8	TYPE2 IT-3
7-685 871-01	SCREW +BVTT 3X6	(S)
7-685 752-04	SCREW +BVTT 3X8	(S)

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	2-352-630-11	CASE, UPPER		17	2-356-207-11	DOOR, FRONT	
2	4-886-821-01	SCREW, M3 CASE		18	X-4907-603-1	FOOT ASSY	
3	*1-615-576-11	FR-10 BOARD		19	*2-352-625-01	PLATE, BOTTOM	
4	*A-7060-069-A	AU-10 BOARD, COMPLETE		20	*1-615-577-11	FR-11 BOARD	
5	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6		21	▲1-448-053-11	TRANSFORMER, POWER	
6	*2-356-209-01	HOLDER, PC BOARD, HEADPHONE		22	*A-7070-062-A	PW-22 BOARD, COMPLETE	
7	*1-615-581-11	FR-17 BOARD		23	*1-615-573-21	PW-21 BOARD	
8	*1-615-578-11	FR-12 BOARD		24	*2-356-211-11	PANEL (P), REAR	
9	*1-615-579-12	FR-13 BOARD		25	▲3-703-244-00	BUSHING (2104), CORD	
10	3-679-808-11	KNOB, SLIDE		26	▲1-534-817-31	CORD, POWER (AEP)	
11	*1-615 580-11	FR-16 BOARD		27	▲1-551-884-32	CORD, POWER (UK)	
12	2-352-612-01	KEY TOP (S)		28	2-352-626-01	BUSHING, CORD	
13	3-679-815-11	KNOB, CONTROL		29	1-558-044-11	CABLE (WITH CONNECTOR) 21P	
14	X-2375-215-1	PANEL SUB ASSY, FRONT		30	*2-387-984-01	LABEL, MODEL NUMBER (AEP)	
15	*2-356-206-01	WINDOW, INDICATION			*2-387-985-01	LABEL, MODEL NUMBER (UK)	
16	*2-356-205-01	PLATE, ORNAMENTAL, VR					

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

SECTION 6

ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
 - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 - Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS**
- MF : μ F, PF : μ μ F
- COILS**
- MMH : mH, UH : μ H
- RESISTORS**
- All resistors are in ohms
 - F : nonflammable

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
	*A-7060-069-A	AU-10 BOARD, COMPLETE *****		C217	1-102-074-00	CERAMIC 0.001MF	10% 50V
		CAPACITOR		C218	1-102-961-00	CERAMIC 27PF	5% 50V
C101	1-101-004-00	CERAMIC 0.01MF	50V	C220	1-123-356-00	ELECT 10MF	20% 16V
C102	1-101-004-00	CERAMIC 0.01MF	50V	C221	1-102-074-00	CERAMIC 0.001MF	10% 50V
C103	1-123-307-00	ELECT 100MF	20% 10V	C222	1-102-961-00	CERAMIC 27PF	5% 50V
C104	1-101-004-00	CERAMIC 0.01MF	50V	C223	1-123-332-00	ELECT 47MF	20% 16V
C105	1-101-004-00	CERAMIC 0.01MF	50V	C226	1-123-332-00	ELECT 47MF	20% 16V
C106	1-101-004-00	CERAMIC 0.01MF	50V	C227	1-102-971-00	CERAMIC 82PF	5% 50V
C107	1-123-356-00	ELECT 10MF	20% 16V	C228	1-102-971-00	CERAMIC 82PF	5% 50V
C108	1-101-004-00	CERAMIC 0.01MF	50V	C229	1-123-332-00	ELECT 47MF	20% 16V
C109	1-102-959-00	CERAMIC 22PF	5% 50V	C231	1-131-343-00	TANTALUM 0.22MF	20% 35V
C110	1-123-356-00	ELECT 10MF	20% 16V	C232	1-102-116-00	CERAMIC 680PF	10% 50V
C111	1-101-004-00	CERAMIC 0.01MF	50V	C233	1-131-371-00	TANTALUM 10MF	10% 16V
C112	1-102-742-00	CERAMIC 2PF	0.25PF 50V	C234	1-130-482-00	MYLAR 0.0082MF	5% 50V
C113	1-123-379-00	ELECT 0.47MF	20% 50V	C235	1-123-380-00	ELECT 1MF	20% 50V
C114	1-123-382-00	ELECT 3.3MF	20% 50V	C236	1-123-307-00	ELECT 100MF	20% 10V
C115	1-123-356-00	ELECT 10MF	20% 16V	C237	1-102-942-00	CERAMIC 5PF	0.5PF 50V
C116	1-102-959-00	CERAMIC 22PF	5% 50V	C238	1-130-479-00	MYLAR 0.0047MF	5% 50V
C117	1-123-382-00	ELECT 3.3MF	20% 50V	C239	1-123-332-00	ELECT 47MF	20% 25V
C118	1-123-307-00	ELECT 100MF	20% 10V	C240	1-130-490-51	MYLAR 0.039MF	5% 50V
C119	1-123-356-00	ELECT 10MF	20% 16V	C241	1-102-110-00	CERAMIC 220PF	10% 50V
C120	1-101-004-00	CERAMIC 0.01MF	50V	C242	1-123-332-00	ELECT 47MF	20% 25V
C121	1-102-125-00	CERAMIC 0.0047MF	10% 50V	C243	1-123-307-00	ELECT 100MF	20% 10V
C122	1-102-950-00	CERAMIC 13PF	5% 50V	C244	1-123-384-00	ELECT 10MF	20% 50V
C123	1-101-004-00	CERAMIC 0.01MF	50V	C245	1-102-959-00	CERAMIC 22PF	5% 50V
C124	1-102-961-00	CERAMIC 27PF	5% 50V	C247	1-123-332-00	ELECT 47MF	20% 25V
C125	1-101-880-00	CERAMIC 47PF	5% 50V	C248	1-123-332-00	ELECT 47MF	20% 25V
C126	1-123-356-00	ELECT 10MF	20% 16V	C249	1-102-973-00	CERAMIC 100PF	5% 50V
C127	1-101-004-00	CERAMIC 0.01MF	50V	C250	1-123-332-00	ELECT 47MF	20% 25V
C128	1-101-004-00	CERAMIC 0.01MF	50V	C251	1-123-332-00	ELECT 47MF	20% 25V
C129	1-101-004-00	CERAMIC 0.01MF	50V	C252	1-101-004-00	CERAMIC 0.01MF	50V
C130	1-101-004-00	CERAMIC 0.01MF	50V	C253	1-101-004-00	CERAMIC 0.01MF	50V
C131	1-101-004-00	CERAMIC 0.01MF	50V	C254	1-123-307-00	ELECT 100MF	20% 10V
C132	1-101-004-00	CERAMIC 0.01MF	50V	C255	1-103-709-00	POLYSTYRENE 220PF	5% 50V
C133	1-101-004-00	CERAMIC 0.01MF	50V	C257	1-124-252-00	ELECT 0.33MF	20% 50V
C134	1-101-004-00	CERAMIC 0.01MF	50V	C258	1-124-252-00	ELECT 0.33MF	20% 50V
C135	1-101-004-00	CERAMIC 0.01MF	50V	C261	1-123-310-00	ELECT 470MF	20% 10V
C136	1-123-307-00	ELECT 100MF	20% 10V	C262	1-101-004-00	CERAMIC 0.01MF	50V
C138	1-101-004-00	CERAMIC 0.01MF	50V	C263	1-131-343-00	TANTALUM 0.22MF	20% 35V
C139	1-123-382-00	ELECT 3.3MF	20% 50V	C264	1-131-371-00	TANTALUM 10MF	10% 16V
C140	1-101-005-00	CERAMIC 0.022MF	50V	C265	1-123-380-00	ELECT 1MF	20% 50V
C141	1-101-005-00	CERAMIC 0.022MF	50V	C266	1-130-482-00	MYLAR 0.0082MF	5% 50V
C143	1-101-004-00	CERAMIC 0.01MF	50V	C267	1-102-116-00	CERAMIC 680PF	10% 50V
C144	1-123-356-00	ELECT 10MF	20% 16V	C268	1-102-942-00	CERAMIC 5PF	0.5PF 50V
C145	1-101-005-00	CERAMIC 0.022MF	50V	C269	1-130-479-00	MYLAR 0.0047MF	5% 50V
C201	1-123-332-00	ELECT 47MF	20% 16V	C270	1-123-332-00	ELECT 47MF	20% 25V
C202	1-123-332-00	ELECT 47MF	20% 16V	C271	1-102-110-00	CERAMIC 220PF	10% 50V
C203	1-123-332-00	ELECT 47MF	20% 16V	C272	1-130-490-51	MYLAR 0.039MF	5% 50V
C204	1-123-332-00	ELECT 47MF	20% 16V	C273	1-123-332-00	ELECT 47MF	20% 25V
C211	1-123-332-00	ELECT 47MF	20% 16V	C274	1-123-307-00	ELECT 100MF	20% 10V
C216	1-123-332-00	ELECT 47MF	20% 16V	C275	1-123-384-00	ELECT 10MF	20% 50V
				C276	1-102-959-00	CERAMIC 22PF	5% 50V
				C277	1-123-332-00	ELECT 47MF	20% 16V

AU-10

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>COIL</u>				R107	1-247-815-00	CARBON 220 5% 1/6W	
L101	1-408-421-00	MICRO INDUCTOR 100UH		R108	1-247-843-00	CARBON 3.3K 5% 1/6W	
L102	1-408-421-00	MICRO INDUCTOR 100UH		R109	1-247-863-00	CARBON 22K 5% 1/6W	
L103	1-408-421-00	MICRO INDUCTOR 100UH		R111	1-247-861-00	CARBON 18K 5% 1/6W	
L104	1-408-421-00	MICRO INDUCTOR 100UH		R112	1-247-859-00	CARBON 15K 5% 1/6W	
<u>TRANSISTOR</u>				R113	1-247-859-00	CARBON 15K 5% 1/6W	
Q101	8-729-900-80	TRANSISTOR DTC114ES		R114	1-247-831-00	CARBON 1K 5% 1/6W	
Q102	8-729-900-80	TRANSISTOR DTC114ES		R116	1-247-815-00	CARBON 220 5% 1/6W	
Q103	8-729-900-80	TRANSISTOR DTC114ES		R117	1-247-823-00	CARBON 470 5% 1/6W	
Q104	8-729-900-80	TRANSISTOR DTC114ES		R118	1-247-823-00	CARBON 470 5% 1/6W	
Q105	8-729-900-80	TRANSISTOR DTC114ES		R119	1-247-823-00	CARBON 470 5% 1/6W	
Q106	8-729-900-80	TRANSISTOR DTC114ES		R122	1-247-853-00	CARBON 8.2K 5% 1/6W	
Q108	8-729-900-80	TRANSISTOR DTC114ES		R124	1-247-833-00	CARBON 1.2K 5% 1/6W	
Q109	8-729-900-80	TRANSISTOR DTC114ES		R125	1-247-833-00	CARBON 1.2K 5% 1/6W	
Q112	8-729-603-30	TRANSISTOR 2SC403SP		R126	1-215-415-00	METAL 560 1% 1/6W	
Q113	8-729-603-30	TRANSISTOR 2SC403SP		R127	1-247-827-00	CARBON 680 5% 1/6W	
Q114	8-729-603-30	TRANSISTOR 2SC403SP		R128	1-247-831-00	CARBON 1K 5% 1/6W	
Q115	8-729-603-30	TRANSISTOR 2SC403SP		R129	1-247-831-00	CARBON 1K 5% 1/6W	
Q116	8-729-900-80	TRANSISTOR DTC114ES		R131	1-247-835-00	CARBON 1.5K 5% 1/6W	
Q117	8-729-900-80	TRANSISTOR DTC114ES		R132	1-247-821-00	CARBON 390 5% 1/6W	
Q119	8-729-900-80	TRANSISTOR DTC114ES		R133	1-247-831-00	CARBON 1K 5% 1/6W	
Q120	8-729-900-80	TRANSISTOR DTC114ES		R134	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q121	8-729-900-80	TRANSISTOR DTC114ES		R135	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q122	8-729-900-80	TRANSISTOR DTC114ES		R136	1-247-823-00	CARBON 470 5% 1/6W	
Q123	8-729-900-80	TRANSISTOR DTC114ES		R137	1-247-791-00	CARBON 22 5% 1/6W	
Q124	8-729-900-80	TRANSISTOR DTC114ES		R138	1-247-823-00	CARBON 470 5% 1/6W	
Q125	8-729-900-80	TRANSISTOR DTC114ES		R139	1-247-879-00	CARBON 100K 5% 1/6W	
Q126	8-729-900-80	TRANSISTOR DTC114ES		R140	1-247-825-00	CARBON 560 5% 1/6W	
Q127	8-729-900-80	TRANSISTOR DTC114ES		R141	1-247-859-00	CARBON 15K 5% 1/6W	
Q128	8-729-900-80	TRANSISTOR DTC114ES		R142	1-247-823-00	CARBON 470 5% 1/6W	
Q129	8-729-245-83	TRANSISTOR 2SC2458		R143	1-247-853-00	CARBON 8.2K 5% 1/6W	
Q130	8-729-245-83	TRANSISTOR 2SC2458		R144	1-247-805-00	CARBON 82 5% 1/6W	
Q201	8-729-900-80	TRANSISTOR DTC114ES		R145	1-247-823-00	CARBON 470 5% 1/6W	
Q202	8-729-900-80	TRANSISTOR DTC114ES		R146	1-247-855-00	CARBON 10K 5% 1/6W	
Q204	8-729-900-80	TRANSISTOR DTC114ES		R147	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q205	8-729-173-37	TRANSISTOR 2SA733		R148	1-247-879-00	CARBON 100K 5% 1/6W	
Q206	8-729-900-80	TRANSISTOR DTC114ES		R149	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q207	8-729-900-80	TRANSISTOR DTC114ES		R150	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q208	8-729-900-80	TRANSISTOR DTC114ES		R151	1-247-855-00	CARBON 10K 5% 1/6W	
Q209	8-729-900-61	TRANSISTOR DTA114ES		R152	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q210	8-729-245-83	TRANSISTOR 2SC2458		R153	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q211	8-729-245-83	TRANSISTOR 2SC2458		R154	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q212	8-729-245-83	TRANSISTOR 2SC2458		R155	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q213	8-729-245-83	TRANSISTOR 2SC2458		R156	1-247-855-00	CARBON 10K 5% 1/6W	
Q214	8-729-180-92	TRANSISTOR 2SD809		R159	1-247-847-00	CARBON 4.7K 5% 1/6W	
<u>RESISTOR</u>				R160	1-247-831-00	CARBON 1K 5% 1/6W	
R101	1-247-767-00	CARBON 2.2 5% 1/6W		R165	1-247-855-00	CARBON 10K 5% 1/6W	
R102	1-247-855-00	CARBON 10K 5% 1/6W		R166	1-247-855-00	CARBON 10K 5% 1/6W	
R103	1-247-767-00	CARBON 2.2 5% 1/6W		R167	1-247-855-00	CARBON 10K 5% 1/6W	
R105	1-247-831-00	CARBON 1K 5% 1/6W		R168	1-247-855-00	CARBON 10K 5% 1/6W	
R106	1-247-767-00	CARBON 2.2 5% 1/6W		R169	1-247-799-00	CARBON 47 5% 1/6W	
				R170	1-247-855-00	CARBON 10K 5% 1/6W	
				R171	1-247-855-00	CARBON 10K 5% 1/6W	

When indicating parts by reference number, please include the board name.

AU-10

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R172	1-247-855-00	CARBON	10K 5% 1/6W	R265	1-247-865-00	CARBON	27K 5% 1/6W
R173	1-247-823-00	CARBON	470 5% 1/6W	R266	1-247-883-00	CARBON	150K 5% 1/6W
R174	1-247-817-00	CARBON	270 5% 1/6W	R267	1-247-867-00	CARBON	33K 5% 1/6W
R175	1-247-879-00	CARBON	100K 5% 1/6W	R268	1-247-843-00	CARBON	3.3K 5% 1/6W
R176	1-247-879-00	CARBON	100K 5% 1/6W	R269	1-247-841-00	CARBON	2.7K 5% 1/6W
R178	1-247-855-00	CARBON	10K 5% 1/6W	R270	1-247-843-00	CARBON	3.3K 5% 1/6W
R201	1-247-887-00	CARBON	220K 5% 1/6W	R271	1-247-849-00	CARBON	5.6K 5% 1/6W
R202	1-247-809-00	CARBON	120 5% 1/6W	R272	1-247-807-00	CARBON	100 5% 1/6W
R203	1-247-855-00	CARBON	10K 5% 1/6W	R273	1-247-845-00	CARBON	3.9K 5% 1/6W
R204	1-247-869-00	CARBON	39K 5% 1/6W	R274	1-247-857-00	CARBON	12K 5% 1/6W
R205	1-247-855-00	CARBON	10K 5% 1/6W	R275	1-247-827-00	CARBON	680 5% 1/6W
R206	1-247-869-00	CARBON	39K 5% 1/6W	R276	1-247-841-00	CARBON	2.7K 5% 1/6W
R207	1-247-809-00	CARBON	120 5% 1/6W	R277	1-249-421-11	CARBON	2.2K 5% 1/6W
R208	1-247-887-00	CARBON	220K 5% 1/6W	R278	1-247-855-00	CARBON	10K 5% 1/6W
R213	1-247-873-00	CARBON	22K 5% 1/6W	R279	1-249-421-11	CARBON	2.2K 5% 1/6W
R214	1-247-873-00	CARBON	22K 5% 1/6W	R280	1-247-843-00	CARBON	3.3K 5% 1/6W
R221	1-247-887-00	CARBON	220K 5% 1/6W	R281	1-247-843-00	CARBON	3.3K 5% 1/6W
R222	1-247-875-00	CARBON	68K 5% 1/6W	R282	1-247-857-00	CARBON	12K 5% 1/6W
R225	1-247-855-00	CARBON	10K 5% 1/6W	R283	1-247-835-00	CARBON	1.5K 5% 1/6W
R226	1-247-855 00	CARBON	10K 5% 1/6W	R285	1-249-421-11	CARBON	2.2K 5% 1/6W
R228	1-247-857-00	CARBON	12K 5% 1/6W	R286	1-247-837-00	CARBON	1.8K 5% 1/6W
R229	1-247-857-00	CARBON	12K 5% 1/6W	R287	1-247-843-00	CARBON	3.3K 5% 1/6W
R230	1-247-831-00	CARBON	1K 5% 1/6W	R288	1-247-855-00	CARBON	10K 5% 1/6W
R231	1-247-831-00	CARBON	1K 5% 1/6W	R289	1-247-901-00	CARBON	820K 5% 1/6W
R232	1-247-807-00	CARBON	100 5% 1/6W	R290	1-215-485-00	METAL	470K 1% 1/6W
R233	1-247-867-00	CARBON	33K 5% 1/6W	R291	1-247-821-00	CARBON	390 5% 1/6W
R234	1-247-855 00	CARBON	10K 5% 1/6W	R292	1-247-831-00	CARBON	1K 5% 1/6W
R235	1-247-815-00	CARBON	220 5% 1/6W	R293	1-247-841-00	CARBON	2.7K 5% 1/6W
R236	1-247-855-00	CARBON	10K 5% 1/6W	R294	1-247-833-00	CARBON	1.2K 5% 1/6W
R237	1-247-865-00	CARBON	27K 5% 1/6W	R295	1-247-811-00	CARBON	150 5% 1/6W
R238	1-247-867-00	CARBON	33K 5% 1/6W	R296	1-247-843-00	CARBON	3.3K 5% 1/6W
R239	1-247-855-00	CARBON	10K 5% 1/6W	R297	1-247-841-00	CARBON	2.7K 5% 1/6W
R240	1-247-815 00	CARBON	220 5% 1/6W	R298	1-247-843-00	CARBON	3.3K 5% 1/6W
R241	1-247-865-00	CARBON	27K 5% 1/6W	R299	1-247-857-00	CARBON	12K 5% 1/6W
R242	1-247-855-00	CARBON	10K 5% 1/6W	R300	1-247-845-00	CARBON	3.9K 5% 1/6W
R243	1-247-807-00	CARBON	100 5% 1/6W	R301	1-249-421-11	CARBON	2.2K 5% 1/6W
R246	1-247-855-00	CARBON	10K 5% 1/6W	R302	1-247-841-00	CARBON	2.7K 5% 1/6W
R249	1-247-831-00	CARBON	1K 5% 1/6W	R303	1-247-827-00	CARBON	680 5% 1/6W
R250	1-247-857-00	CARBON	12K 5% 1/6W	R304	1-247-855-00	CARBON	10K 5% 1/6W
R251	1-247-847-00	CARBON	4.7K 5% 1/6W	R305	1-249-421-11	CARBON	2.2K 5% 1/6W
R252	1-249-421-11	CARBON	2.2K 5% 1/6W	R306	1-247-843-00	CARBON	3.3K 5% 1/6W
R253	1-247-831-00	CARBON	1K 5% 1/6W	R307	1-247-857-00	CARBON	12K 5% 1/6W
R254	1-249-421-11	CARBON	2.2K 5% 1/6W	R308	1-247-835-00	CARBON	1.5K 5% 1/6W
R255	1-247-847-00	CARBON	4.7K 5% 1/6W	R309	1-247-843-00	CARBON	3.3K 5% 1/6W
R256	1-247-847-00	CARBON	4.7K 5% 1/6W	R310	1-247-831-00	CARBON	1K 5% 1/6W
R257	1-247-857-00	CARBON	12K 5% 1/6W	R311	1-247-855-00	CARBON	10K 5% 1/6W
R258	1-247-847-00	CARBON	4.7K 5% 1/6W	R312	1-247-831-00	CARBON	1K 5% 1/6W
R259	1-247-831-00	CARBON	1K 5% 1/6W	R313	1-247-807-00	CARBON	100 5% 1/6W
R260	1-247-855-00	CARBON	10K 5% 1/6W	R314	1-247-855-00	CARBON	10K 5% 1/6W
R261	1-247-831-00	CARBON	1K 5% 1/6W	R315	1-249-421-11	CARBON	2.2K 5% 1/6W
R262	1-247-867-00	CARBON	33K 5% 1/6W	R316	1-247-843-00	CARBON	3.3K 5% 1/6W
R263	1-247-865-00	CARBON	27K 5% 1/6W	R317	1-247-837-00	CARBON	1.8K 5% 1/6W
R264	1-247-883-00	CARBON	150K 5% 1/6W	R323	1-247-807-00	CARBON	100 5% 1/6W

When indicating parts by reference number, please include the board name.

AU-10**PW-21****PW-22**

Ref.No	Part No.	Description	Remark
R326	1-247-887-00	CARBON 220K 5% 1/6W	
R327	1-247-871-00	CARBON 47K 5% 1/6W	
R328	1-247-844-00	CARBON 5.6K 5% 1/6W	
R329	1-247-849-00	CARBON 5.6K 5% 1/6W	
R330	1-247-849-00	CARBON 5.6K 5% 1/6W	
R332	1-247-823-00	CARBON 470 5% 1/6W	
R335	1-247-845-00	CARBON 3.9K 5% 1/6W	
R336	1-247-767-00	CARBON 2.2 5% 1/6W	
R337	1-247-829-00	CARBON 820 5% 1/6W	
R338	1-247-807-00	CARBON 100 5% 1/6W	
R339	1-247-807-00	CARBON 100 5% 1/6W	
R340	1-247-807-00	CARBON 100 5% 1/6W	
R341	1-247-879-00	CARBON 100K 5% 1/6W	
R342	1-247-879-00	CARBON 100K 5% 1/6W	
R344	1-247-855-00	CARBON 10K 5% 1/6W	
R345	1-247-855-00	CARBON 10K 5% 1/6W	
R353	1-249-421-11	CARBON 2.2K 5% 1/6W	
R354	1-249-421-11	CARBON 2.2K 5% 1/6W	
R359	1-249-421-11	CARBON 2.2K 5% 1/6W	
R360	1-249-421-11	CARBON 2.2K 5% 1/6W	
R361	1-249-421-11	CARBON 2.2K 5% 1/6W	
R362	1-247-891-00	CARBON 330K 5% 1/6W	
R363	1-247-891-00	CARBON 330K 5% 1/6W	
R365	1-247-804-00	CARBON 75 5% 1/6W	
R366	1-249-421-11	CARBON 2.2K 5% 1/6W	
R367	1-247-869-00	CARBON 39K 5% 1/6W	
R368	1-247-869-00	CARBON 39K 5% 1/6W	
R376	1-247-841-00	CARBON 2.7K 5% 1/6W	
R377	1-247-841-00	CARBON 2.7K 5% 1/6W	
R501	1-247-855-00	CARBON 10K 5% 1/6W	

VARIABLE RESISTOR

RV101	1-228-991-00	RES, ADJ, CARBON 2.2K
RV102	1-228-991-00	RES, ADJ, CARBON 2.2K
RV204	1-228-993-00	RES, ADJ, CARBON 4.7K
RV205	1-228-993-00	RES, ADJ, CARBON 4.7K
RV207	1-228-995 00	RES, ADJ, CARBON 22K
RV208	1-228-995-00	RES, ADJ, CARBON 22K
RV209	1-228-999-00	RES, ADJ, CARBON 470K
RV211	1-228-994-00	RES, ADJ, CARBON 10K
RV212	1-228-994-00	RES, ADJ, CARBON 10K

CRYSTAL

X101	1-567-419-11	VIBRATOR, LITHIUM TANTALATE
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*1-615-573-21 PW-21 BOARD

1-533-162-00 HOLDER, FUSE
2-430-344-01 COVER (CC-1017), INSULATING
3-691-946-01 COVER, SQUARE CAPACITOR

Ref.No	Part No.	Description	Remark
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CAPACITOR

C601	A.1-161-742-00	CERAMIC 0.0022MF 20% 400V	(AEP MODEL)
C602	A.1-161-742-00	CERAMIC 0.0022MF 20% 400V	(AEP MODEL)
C603	A.1-161-742-00	CERAMIC 0.0022MF 20% 400V	(AEP MODEL)
C604	A.1-130-710-00	FILM 0.1MF 20% 250V	
C616	A.1-161-742-00	CERAMIC 0.0022MF 20% 400V	(AEP MODEL)

FUSE

F601	A.1-532-612-00	FUSE, TIME-LAG (T160mA/125V)
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TRANSFORMER

LFT601	A1-421-357-31	TRANSFORMER, LINE FILTER
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*A-7070-062-A PW-22 BOARD, COMPLETE (AEP MODEL)

*A-7070-063-A PW-22 BOARD, COMPLETE (UK MODEL)

1-533-162-00 HOLDER, FUSE
*4-363-146-00 HEAT SINK, V.OUT
*4-875-327-01 HEAT SINC
7-682-547-09 SCREW +B 3X6
7-685-871-01 SCREW +BVT 3X6 (S)

CAPACITOR

C606	1-124-314-00	ELECT 4700MF 20% 25V
C607	1-124-314-00	ELECT 4700MF 20% 25V
C608	1-124-563-11	ELECT 2200MF 20% 25V
C609	1-123-333-00	ELECT 100MF 20% 16V
C610	1-123-333-00	ELECT 100MF 20% 25V
C611	1-123-333-00	ELECT 100MF 20% 25V
C614	1-101-005-00	CERAMIC 0.022MF 50V
C615	1-101-005-00	CERAMIC 0.022MF 50V
C616	1-101-005-00	CERAMIC 0.022MF 50V

CONNECTOR

CN602	*1-560-895-00	PIN, CONNECTOR 7P
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DIODE

D601	8-719-200-54	DIODE 10E-2FD
D602	8-719-200-54	DIODE 10E-2FD
D603	8-719-200-54	DIODE 10E-2FD
D604	8-719-200-54	DIODE 10E-2FD
D605	8-719-200-54	DIODE 10E-2FD
D606	8-719-200-54	DIODE 10E-2FD
D607	8-719-200-54	DIODE 10E-2FD
D608	8-719-200-54	DIODE 10E-2FD
D609	8-719-200-54	DIODE 10E-2FD

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

PW-22**FR-10****FR-11****FR-13****FR-16**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
D610	8-719-100-43	DIODE RD7.5EB1		<u>INDICATOR TUBE</u>			
D611	8-719-100-54	DIODE RD9.1EB2		FL801	1-519-355-11	INDICATOR TUBE, FLUORESCENT	
D612	8-719-156-07	DIODE RD5.6EB		<u>IC</u>			
<u>FUSE</u>				IC801	8-759-906-02	IC BA6146	
F602	△ 1-532-066-00	FUSE, TIME-LAG (T400mA/250V)		IC802	8-759-906-02	IC BA6146	
F604	△ 1-532-066-00	FUSE, TIME-LAG (T400mA/250V)		<u>RESISTOR</u>			
<u>IC</u>				R830	1-247-855-00	CARBON	10K 5% 1/6W
IC601	8-759-700-14	IC NJM78M09A		R831	1-247-855-00	CARBON	10K 5% 1/6W
IC602	8-759-700-23	IC NJM79M09A		R832	1-247-855-00	CARBON	10K 5% 1/6W
IC603	8-759-700-11	IC NJM78M05A		R833	1-247-855-00	CARBON	10K 5% 1/6W
<u>TRANSISTOR</u>				*****			
Q601	8-729-103-43	TRANSISTOR 2SB734		*1-615-577-11	FR-11 BOARD	*****	
Q602	8-729-245-83	TRANSISTOR 2SC2458		<u>CONNECTOR</u>			
Q603	8-729-177-32	TRANSISTOR 2SD773		CN807	*1-564-016-00	PIN, CONNECTOR 6P	
Q604	8-729-900-80	TRANSISTOR DTC114ES		<u>VARIABLE RESISTOR</u>			
Q605	8-729-113-32	TRANSISTOR 2SB733		RV802	1-230-008-00	RES, VAR, SLIDE 20K/20K	
Q606	8-729-900-80	TRANSISTOR DTC114ES		*****			
<u>RESISTOR</u>				*1-615-579-12	FR-13 BOARD	*****	
R601	1-247-863-00	CARBON	22K 5% 1/6W	<u>CAPACITOR</u>			
R602	1-247-831-00	CARBON	1K 5% 1/6W	C803	1-101-004-00	CERAMIC	0.01MF 50V
R603	1-247-863-00	CARBON	22K 5% 1/6W	<u>CONNECTOR</u>			
R604	1-247-823-00	CARBON	470 5% 1/6W	CN203	*1-560-892-00	PIN, CONNECTOR 4P	
R605	1-247-807-00	CARBON	100 5% 1/6W	<u>JACK</u>			
R606	1-247-863-00	CARBON	22K 5% 1/6W	J802	1-507-806-41	JACK	
R607	1-247-863-00	CARBON	22K 5% 1/6W	J803	1-507-806-41	JACK	
R608	1-249-421-11	CARBON	2.2K 5% 1/6W	*****			
R609	1-247-827-00	CARBON	680 5% 1/6W	*1-615-580-11	FR-16 BOARD	*****	
<u>THERMISTOR</u>				<u>SWITCH</u>			
THP601	△ 1-806-882-11	THERMISTOR (POSITIVE)		S802	1-553-754-00	SWITCH, SLIDE	
*****				S803	1-553-754-00	SWITCH, SLIDE	
*1-615-576-11	FR-10 BOARD	*****		S804	1-553-716-00	SWITCH, SLIDE	
*2-356-201-01	HOLDER, LED			S805	1-553-716-00	SWITCH, SLIDE	
<u>CAPACITOR</u>				S806	1-554-174-00	SWITCH, KEY BOARD	
C830	1-124-240-00	ELECT	10MF 20% 25V	*****			
C831	1-124-240-00	ELECT	10MF 20% 25V				
C832	1-124-249-00	ELECT	0.1MF 20% 50V				
C833	1-124-249-00	ELECT	0.1MF 20% 50V				
<u>DIODE</u>							
D801	8-719-901-64	DIODE LT-9200D					
D802	8-719-901-65	DIODE LT-9200H					
D803	8-719-901-64	DIODE LT-9200D					
D805	8-719-906-49	DIODE LT-9230N					

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

FR-17

FR-12

<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
	*1-615-581-11	FR-17 BOARD *****	
		<u>VARIABLE RESISTOR</u>	
RV801	1-230-771-11	RES, VAR, CARBON 5K/5K	

	*1-615-578-11	FR-12 BOARD *****	
J801	1-507-787-11	JACK (HEADPHONES)	

		<u>MISCELLANEOUS</u> *****	
	A.1-534-817-31	CORD, POWER (AEP)	
	A.1-551-884-32	CORD, POWER (UK)	
	1-558-044-11	CABLE (WITH CONNECTOR) 21P	
T601	A.1-448-053-11	TRANSFORMER, POWER	

		<u>ACCESSORIES AND PACKING MATERIALS</u> *****	
	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
	1-534-049-31	CORD, CONNECTION (RK-74H)	
	*2-352-653-01	CUSHION (LEFT)	
	*2-352-654-01	CUSHION (RIGHT)	
	*2-356-224-11	INDIVIDUAL CARTON	
	3-760-385-11	MANUAL, INSTRUCTION (AEP, UK)	
	3-760-385-41	MANUAL, INSTRUCTION (AEP)	
	3-760-385-51	MANUAL, INSTRUCTION (AEP)	

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 7

ELECTRICAL ADJUSTMENTS

The measuring instruments listed below are used for adjusting this set.

- 1) VTR (EV-A300EC/A300UB, etc.)
- 2) Oscilloscope (dual-trace)
- 3) Frequency counter
- 4) Audio level meter
- 5) Audio distortion meter
- 6) Audio oscillator
- 7) Audio attenuator
- 8) DC voltmeter
- 9) Stereo signal generator
- 10) Alignment tape for operation check (WR5-3NSP
Part number: 8-969-995-22)

Adjustment is performed by connecting a multi-cable to a VTR.
The following table indicates the multi-cable pin functions.

Pin No.	I/O	Function	Description
1	Input	APB	"L" for REC, "H" for PB.
2	Input	L MUTE	"L" for muting
3	Input	A REC	"L" for DUB, "H" for REC, PB, DUB PAUSE.
4	Input	PAUSE	"L" for REC, DUB; "H" for DUB PAUSE.
5	Input	RF SW	RF switching pulse
6	Input	S REF	Servo reference
7	Input	PB HD	PB H sync
8	Input	AFON	Processor DUB SW output
9	Output	RAREA	recording area
10	Output	FEAR	flying erase area
11	Output	INSAR	insert area
12	Output	INSHD	insert H sync
13	Input	AFM	
14	—	AFM GND	
15	Input	D GND	digital ground
16	Output	REC RF	recording RF
17	Input	PB RF	playback RF
18	—	RF GND	
19	Input	TV sound	
20	—	TV sound GND	
21	—	C GND	chassis ground

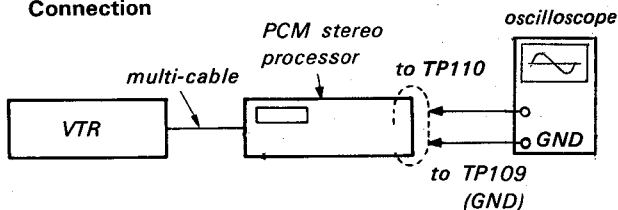
7-1. MASTER CLOCK ADJUSTMENT (AU-10 BOARD)

Conditions

Stand-by switch (SW804): ON

Oscilloscope: TP110 (GND: TP109)

Connection



Adjustment Method:

Adjust RV101 so that the 50Hz waveform becomes a static wave (duty 50% ± 2%).

7-2. A/D OFFSET ADJUSTMENT (AU-10 BOARD)

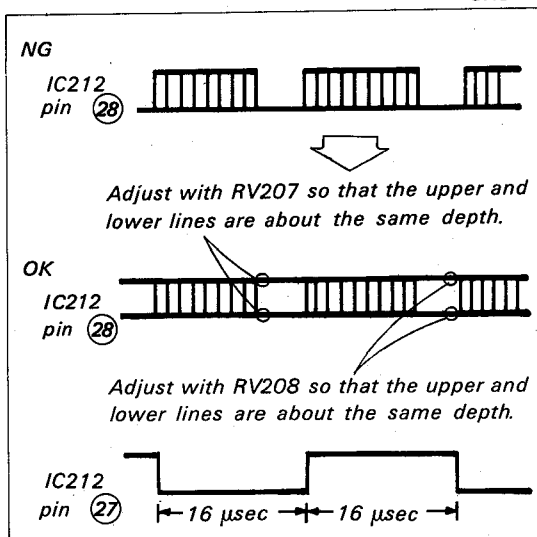
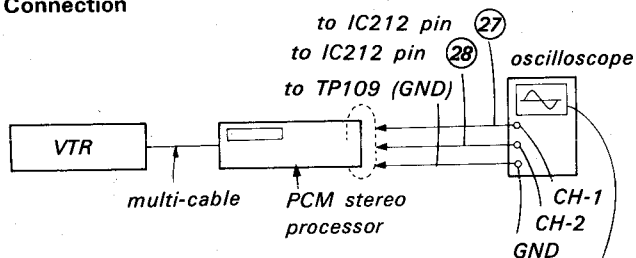
Conditions:

Stand-by switch (SW804): ON

REC LEVEL: MIN ("0" position)

Oscilloscope (dual-trace): CH1: IC212 pin ②⑦ (for trigger)
CH2: IC212 pin ②⑧, (GND: TP109)

Connection



Adjustment Method:

- Adjust RV207 and RV208 so that IC212 pin ②⑧ waveform upper and lower lines are about the same depth. The adjustment order is RV207 → RV208 → RV207 → RV208.

7-3. A/D GAIN ADJUSTMENT (AU-10 BOARD)

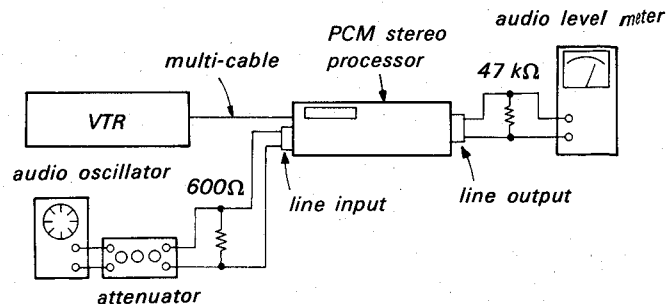
Conditions:

Stand-by switch (SW804): ON

Audio input switch (SW802): line 1

REC LEVEL: standard ("5" position)

Connection



Adjustment Method:

- Record the 400Hz, -10dBs signal on line input (both left and right).
- Play back the recorded portion, and confirm that level meter reading is -10 ± 0.5 dBs. If not, adjust RV211 (left) and RV212 (right), and record and play back again until the value is -10 ± 0.5 dBs.

7-4. LEVEL METER ADJUSTMENT (AU-10 BOARD)

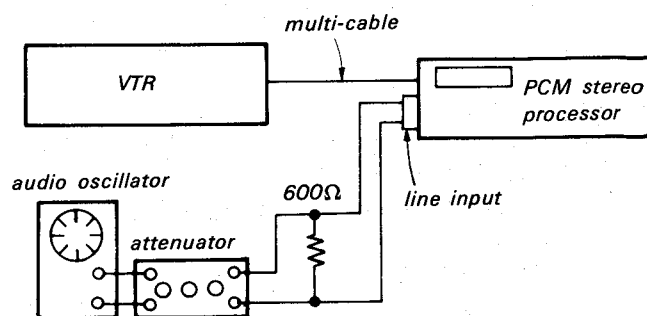
Conditions:

Stand-by switch (SW804): ON

Audio input switch (SW805): line

REC LEVEL: standard ("5" position)

Connection



Adjustment Method:

- Input a 400Hz, -10dBs signal to line input (both left and right).
- Adjust RV204 (left) and RV205 (right) so that the LEVEL display is "10" (-10 dBs).

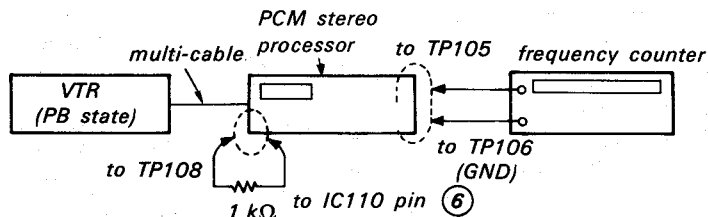
7-5. RF CLOCK ADJUSTMENT (AU-10 BOARD)

Conditions:

Stand-by switch (SW804): ON

Frequency counter: TP105 (GND: TP106)

Connection



Adjustment Method:

- (1) Connect a 1 kΩ resistor between TP108 and IC110 pin ⑥.
- (2) Play back any tape (no-signal tape OK) on the VTR.
- (3) Adjust RV102 so that frequency counter reading is 11.54 ± 0.05 MHz.
- (4) Remove the 1 kΩ between TP108 and IC110 pin ⑥.

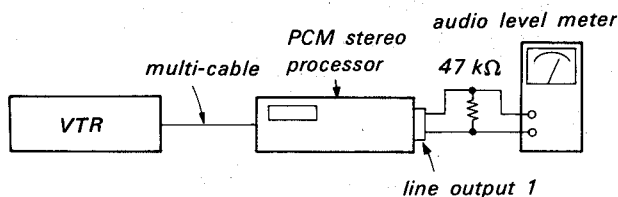
7-6. D/A GAIN ADJUSTMENT (AU-10 BOARD)

Conditions:

Stand-by switch (SW804): ON

Audio monitor switch (SW805): PCM

Connection



Adjustment Method:

- (1) Play back the alignment tape (WR5-3NSP, 400Hz or 1 kHz section) on the VTR.
- (2) Adjust RV209 so that level meter reading is -10.5 ± 0.2 dBs (tape output level).